THE IRON TRADE REVIEW

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Mills Turning Out Very Heavy Production

And Have Troubles in Satisfying Consumers—Pig Iron Stocks Being Steadily Reduced—Some Price Advances Expected

Mills are being severely taxed to satisfy their customers in deliveries. In the Chicago district particularly, difficulty is being experienced in meeting delivery demands. Leading producers report that business during the past month has been heaviest in sheets, wire and merchant pipe, though railroad tonnage has continued large. Indications point to an advance in the prices of merchant pipe at an early date. The Corporation's unfilled tonnage in May will show a small increase, though new business is not as large as in April, and shipments have been heavier. Pig iron stocks in the country are being reduced at present at the rate of 100,000 to 150,000 tons monthly. In the Pittsburgh, valley and Cleveland districts, the reduction has lately been at the rate of 40,000 tons monthly. Stocks in that section are between 550,000 and 600,000 tons, or fully 400,000 tons below the recent high point.

Pig Iron

Steel makers in the St. Louis territory have closed with the leading southern maker of basic pig iron for 26,000 tons for third quarter at $11.25, Birmingham. The American Steel & Wire Co. has made an additional purchase of 2,400 tons of low phosphorus from an eastern maker for last half delivery at its Worcester, Mass., plant. Sales in the New York territory within a few days have aggregated 20,000 tons, including one of from 6,000 to 8,000 tons, and one of 5,000 tons, of foundry grades, and one of 5,000 tons of special analysis iron. The sales were made by Buffalo and Lehigh valley furnaces. Stove makers have recently purchased from 5,000 to 6,000 tons in the Philadelphia market. The Pennsylvania railroad is in the market for 4,300 to 8,600 tons of various grades and the Norfolk & Western is expected to buy 4,500 tons. In Pittsburgh, the most important sale of basic was for 6,000 tons for early delivery at about $13, valley. Considerable tonnage of Bessemer has recently been purchased at $14.25, valley. There is still some weakness in the Ironton, O., market.

Railroad Buying

The Pennsylvania Lines West have placed an order for 3,000 cars, with the Pressed Steel Car Co. and the Standard Steel Car Co., getting 1,000 cars each, and the Cambria Steel Co. and the American Steel & Foundry Co., 500 cars each. The Pressed Steel Car Co. has also taken 1,000 cars from the Seaboard Air Line. Small orders for cars and rails are numerous, but there are few large purchases. The Illinois Central has divided 25,000 tons of rails between the Illinois Steel Co. and the Tennessee Coal, Iron & Railroad Co. The Illinois Steel Co. has taken 12,000 tons of rails from various companies. The St. Paul has contracted with the American Bridge Co. for 5,400 tons for a viaduct at Des Moines. The King Bridge Co. will erect the new Nickel Plate bridge at Buffalo, 1,400 tons. The Chesapeake & Ohio will receive bids June 3, for a large pier at Newport News, which will require from 8,000 to 10,000 tons.

Structural Material

Contracts pending in New York and New England territory call for 50,000 tons of structural material. The Carnegie Steel Co. has taken a contract to furnish 7,000 tons of shapes and plates for two barges and two steamships to be built by the American Ship Building Co. for the Standard Oil Co., which will use the boats in transporting crude oil from foreign countries. Contracts awarded at Chicago last week amount to 11,052 tons, of which 64 per cent went to the leading interest. The awards included 1,485 tons for hot bed mills for the Minnesota Steel Co., Duluth, to the American Bridge Co. The Cambria Steel Co. will furnish from 1,200 to 1,300 tons for the Vendig hotel, Philadelphia. Awards in the Metropolitan district include 2,500 tons for a loft for the Flemish Realty Co., to the American Bridge Co.; 2,000 tons for a building for the Kinney Realty Co., Newark, N. J., by the Hay Foundry & Iron Works, and the general contract for the Turk's Head building, Providence, R. I., 2,500 tons, to the Thompson-Starrett Co. The steel work for the last named contract will be erected by the New England Structural Co. The McClintic-Marshall Construction Co. has taken 1,500 tons for an extension to the Cramp ship yards, and 1,200 tons for a new mill to be built for the Alan Wood Iron & Steel Co.

Plates

Plate mills are well supplied with orders and sales have been made by eastern plants for delivery in Chicago at a premium of $2. Other buyers are offering premiums of from $1 to $1.50 for June and July shipments. The leading interest, which has recently bought round tonnages of crude steel, is negotiating for 20,000 tons or more additional. The scarcity of semi-finished steel continues to be an important factor and prices are being advanced. Forging billets are scarce and are firm at $28, Pittsburgh.

PITTSBURGH

Important Car Orders Placed---Mills Very Busy

Office of THE IRON TRADE REVIEW,
2148-49 Oliver Bldg., May 28.

Production and shipments of iron and steel for May promise to equal the best records thus far this year. New business has not been quite so active the past week, but this is usual at the close of the present month. Pig iron buying has been light with exception of Bessemer, of which there has been much quiet buying and some big tonnages are now being delivered by furnaces. The advancing prices of coke are stiffening all pig iron values. Plates and shapes are strong, and new business of important volume has been placed. Semi-finished steel is more scarce, and $1 a ton higher. Scarcity of labor has become a more serious factor, and is interfering with production at many plants.

Pig Iron.—The past week has been somewhat quiet, but a fair amount of small tonnage was placed for the third quarter, and in view of the advancing price for coke, most merchant furnaces have stiffened up considerably on their quotations on all grades of iron and talk of still further advances in spite of a somewhat hesitating market. The most important sale of basic iron was for 6,000 tons for early delivery, which was placed with a furnace outside the valleys, and is reported to have been closed at about $13, valley. The same buyer is in the market for twice the tonnage for later delivery, but found it impossible to place this below $13.25. Some furnaces were asking $13.50. The market for Bessemer is quiet on the surface, but there is evidence of some big buying having been done during the recent week or two, upon which deliveries are now being made. This, however, is of a quiet nature, and not generally known to the trade. The tonnage was placed at $14.25, valley, for the third quarter. Gray forge iron has been practically sold up to July 1, and is very firm at $13.25, valley. Comparatively few furnaces are running on gray forge, and that tonnage thus far is well booked ahead, some through the last half of the year. In foundry iron, there are numerous inquiries, probably aggregating from 12,000 to 15,000 tons for the third quarter and last half, and the quotation has become general at $13.50, valley. Consumers of malleable iron are melting more heavily, and will soon be in the market for considerable tonnage, but at present are working on their accumulated stocks, which are rapidly disappearing.

We quote the market as follows:

(Prompt Shipment.)

Bessemer, valley	$14.25
Bessemer, Pittsburgh	15.15
Basic, valley	13.00
Basic, Pittsburgh	13.90
No. 2 foundry, Pittsburgh	14.15
Gray forge, Pittsburgh	14.15
Malleable, Pittsburgh	14.15

(Third Quarter.)

Bessemer, valley	$14.25
Bessemer, Pittsburgh	15.15
Basic, Pittsburgh	14.15
No. 2 foundry, Pittsburgh	14.40
Gray forge, Pittsburgh	14.15
Malleable, Pittsburgh	14.15

Ferro-Alloys.—The demand for ferro-alloys was more quiet during the past week. Ferro-manganese in small lots was sold at $58 to $60 for car load lots and less, and for prompt shipment, but these sales were few. Most of the consumers seem to be fairly well covered for the third quarter and some for the last half of the year. The same condition exists with ferro-silicon, 50 per cent, and the price is very firm at $70, but sales are few and not important. Domestic grades of ferro-silicon are somewhat less active, although a fair volume seems to be moving on contract shipments.

We quote ferro-manganese at $48.50, Baltimore, and $58 to $60 for prompt delivery. The freight rate from Baltimore to Pittsburgh is $1.95 per ton.

Fifty per cent ferro-silicon is quoted nominally at $70, Pittsburgh, for prompt and forward delivery; 12 per cent, $22; 11 per cent, $21; 10 per cent, $20, f. o. b. Globe, Jisco and Ashland furnaces. The freight rate to Pittsburgh is $1.90. The foreign grades are held at $1 or more a ton over domestic prices.

Plates.—There has been less new business booked for plates and shapes during the past week, but specifications are continuing very heavy and mills are far behind on deliveries. Car buying by railroads has figured prominently in the market, and inquiries are still pending that promise to bring out a large volume of new business in the near future. The important new car buying of the present week was an order placed by the Pennsylvania lines west for 3,000 cars, 1,000 going to the Pressed Steel Car Co., 1,000 to the Standard Steel Car Co., 500 to the Cambria Steel Co., and 500 to the American Car & Foundry Co., which represents about 36,000 tons of new plate business. The Pressed Steel Car Co. also has 1,000 cars for the Seaboard Air Line, and builders are figuring on 200 steel hoppers for the same road. Among the more important inquiries from eastern roads is that of the Boston & Maine for 4,730 freight cars, including 230 hoppers, 600 box, 300 auto, 150 refrigerator, 100 heater cars and 80 cabooses. The road is also asking for 150 passenger coaches, which are expected to be of the all-steel type. Ship plate requirements have not been large, but the outlook is excellent for some big tonnage developing soon. We quote the market as follows:

Tank plates, ¼ inch thick, 6¼ to 100 inches, 1.25c. Extras are as follows per 100 pounds: Boiler and flange steel plates, 0.10c, A. B. M. and ordinary firebox steel plates, 0.20c; still bottom steel, 0.30c; marine steel, 0.40c; locomotive firebox steel, 0.50c; all sketches excepting straight taper plates varying not more than 4 inches in width at ends, narrowest end being not less than 30 inches 0.10c; circles, 0.20c. Plates in widths over 100 inches up to 110 inches, 0.05c; over 110 inches up to 115 inches, 0.10c; over 115 inches up to 120 inches, 0.15c; over 120 inches up to 125 inches, 0.25c; over 125 inches up to 130 inches, 0.50c; over 130 inches, 1c Gages under ½ inch to and including $\frac{5}{16}$-inch plate on thin edge, 0.10c; under $\frac{5}{16}$ and including No. 9, 0.25c. Five cents extra for less than carloads. Terms net cash in 30 days.

Sheets.—Specifications against contracts for black and galvanized sheets continue very heavy. Most makers are booked far into the fourth quarter, and are in a comfortable position. There are few, however, who, lacking in immediate business or needing specifications, are reported to be shading the market to some extent. While 1.95c for No. 28 gage black sheets is fairly well established, there are reports here and there of 1.90c being quoted for prompt shipment stocks in the middle west. About the same condition exists in galvanized sheets, and sales were made last week at as low as 2.85c for No. 28 gage, but this was only for prompt shipment and the tonnage represented was

small, the maker's plant being a small one. The bulk of business is still being taken at the nominal market price of 1.95c for black sheets and 3c for galvanized, and new business is being booked at this price quite freely.

We quote the market as follows:

Flat Sheets

Black Sheets.—Nos. 10-12, $1.60 per 100 pounds; Nos. 13-14, $1.65; Nos. 15-16, $1.70; Nos. 17-21, $1.75; Nos. 22-24, $1.70 to $1.80; Nos. 25-26, $1.75 to $1.85; No. 27, $1.90; No. 28, $1.95; No. 29, $2.00; No. 30, $2.10.

Blue Annealed.—Nos. 3-8, $1.35 per 100 pounds; Nos. 9-10, $1.40; Nos. 11-12, $1.45; Nos. 13-14, $1.50; Nos. 15-16, $1.60.

Galvanized.—Nos. 10-11, $2.00 per 100 pounds; Nos. 12-14, $2.10; Nos. 15-16, $2.25; Nos. 17-21, $2.40; Nos. 22-24, $2.50; Nos. 25-26, $2.70; No. 27, $2.85; No. 28, $3.00; No. 29, $3.10; No. 30, $3.30.

Roofing Sheets

Galvanized

Net extras on all gages per 100 pounds. Corrugated 2-inch, 2½-inch, 3-inch and 5-inch corrugation, 5c; 2 V crimped without sticks, 5c; corrugated 1¼-inch corrugation, 10c, 3 V crimped without sticks, 10c; pressed standing seam with cleats, 15c; plain roll roofing with cleats, 15c.

Painted Roofing

12 to 18 gage, inc., 5c; 19 to 24 gage, inc., 10c; 25 to 28 gage inc., 15c.

Tin Plate.—There is a very strong tone to the tin plate market, and while $3.40 per base box for coke tin is ruling for business running into the third quarter, small lots are bringing $3.50 both by independents and the leading interest. There is a marked scarcity of labor in the tin mills and also in all of the lighter finished steel products. This is having an effect on curtailing production all over the country, particularly in the Pittsburgh district. The leading interest is not booking new business with deliveries required before the fourth quarter. We quote the market as follows:

Coke tin plate, 100-pound basis, 14 x 20, $3.40 to $3.50, f. o. b. mill, Pittsburgh district.

Rails and Track Material.—Light rails are in good demand, and specifications are coming in in a very satisfactory manner to the mills, which are operating to capacity on this department of the rail market. Prices are holding very firm, and new business is also developing more generally than has been the case for some weeks, the buyers having apparently fairly well digested the higher prices that are now asked. The demand for standard section rails has somewhat improved during the past week, considerable new tonnage having reached the Pittsburgh mills, and specifying is also on a heavy tonnage basis. Most of the production is of open-hearth, and the leading interest is now sold far ahead for rails of this character. There is some improvement in Bessemer rails, and inquiries indicate the last half of the year will be exceptionally brisk. Track supplies are also firmer, and specifications are running heavier from week to week, the advance in railroad spikes being firmly held, and there has been a firming up on tie plates, splice bars and nuts and bolts.

The market is quoted as follows, with the base price on open-hearth steel rails 1.34c per pound at the mill.

Fifty-pound and heavier, 1.25c per pound; carloads and less than 500 tons, 1.34c per pound; light rails on base weight of 40 to 45 pounds, 1.15c, the schedule on the other weights being irregular and subject to negotiations; angle splice bars for standard sections, 1.50c, Pittsburgh; track bolts, 2.20c to 2.25c, Pittsburgh.

Railroad Spikes

4½, 5 and 5½ and 9-16	$1.45
3, 3½, 4, 4½ and 5 x ½	.10
3½ 4 and 4½ x ⅝	.20
3, 3½, 4 and 4½ x ¾	.30
2½ x ¾	.40
2½, 3 and 3½ x ¾	.60
2 x 5-16	.80

Steel.—The scarcity in semi-finished steel continues to be one of the strong factors in the market with the demand ahead of production for both open-hearth and Bessemer sheet bars and small billets. The fact that the leading interest has been an extensive buyer of steel for the past two or three weeks and has gathered up much spare tonnage has caused the market to advance more rapidly than it was hoped would be the case by buyers. About 9,000 tons of sheet bars were sold last week at $22. An advance of 50 cents was then demanded, which held off further purchases. Later, an independent consumer placed for immediate requirements at $23, Pittsburgh, for about 3,000 tons for prompt shipment. The shortage is mainly in open-hearth steel, although Bessemer steel is fairly well sold up and is being held firmly at equal prices. Consumers are seeking to cover for the third quarter and last half, and considerable negotiating is on at present. Forging billets are scarce and very firm at $28, Pittsburgh. The leading interest is out of the market for both forging billets and rolling billets and sheet bars, and is behind on deliveries on such contracts as it is now filling. We quote the market as follows:

Bessemer 4 x 4 billets with 0.25 carbon and less are quoted at $22.00 to $23.00, with the usual extra for size and analysis, and open-hearth rolling billets, $22.00 to $23.00. Bessemer sheet and tin bars are quoted at $22.00 to $23.00, and open-hearth sheet bars are quoted at $22.00 to $23.00, f. o. b. Pittsburgh, for second quarter, with full freight to destination added. Forging billets are quoted at $28, Pittsburgh.

Hoops and Bands. — Specifications continue fairly active in hoops and bands, and new business is being booked in small lots with firm prices ruling, 1.25c to 1.30c being quoted on steel hoops, and 1.20c for bands. We quote the market as follows:

Hoops in carload lots, 1.25c to 1.30c, Pittsburgh; in less than carload lots, 1.40c; bands 1.20c, base, with net extras, as per standard steel.

Merchant Bars.—The demand for merchant bars is large for this season of the year, the great bulk of the consumers having covered for their requirements, but new business, as a rule, is for tonnage in excess of that which is customarily received by the bar manufacturers at this season. Bar prices have been firmly maintained at 1.20c, Pittsburgh, and there has been some further advance in warehouse prices to correspond with the new market quotations. Iron bars are in better demand, and prices are very firm, but unchanged. Steel shafting, in so far as new business is concerned, is quiet, but specifying is very active on existing contracts, and prices are holding very firm. Manufacturers are generally pleased with the present outlook. We quote the market as follows:

Common iron bars, 1.30c to 1.35c, Pittsburgh; Bessemer and open-hearth steel bars, 1.20c; plow and cultivator, 1.25c; channels, angles, zees, tees, under 3 inch, 1.25c, all f. o. b. mill. The following differentials are maintained on steel: Less than 2,000 pounds of a size, 0.35 advance. Cold rolled and ground shafting, 65 per cent off in carloads and 60 and 10 per cent in less than carloads, delivered in base territory.

Muck Bar.—Inquiries for muck bar show some improvement, and indications of a fair tonnage coming out in June are on every hand. The advance of $1 a ton made two weeks ago is being generally regarded as the minimum, and such tonnage as is now being quoted is on this basis. A good many consumers are still able to maintain their own supply, but are reaching a point where the open market will have to supplement their own capacity and are looking about for some round lots of material for the last half. We quote $29 to $30, Pittsburgh.

Structural.—Better inquiries are being made to fabricators for structural material on large orders than for some time, leading fabricating companies reporting more business in sight than at any time for several months. Should this new turn develop as strong as indicated, it is believed that most of the fabricators will be congested with business for the last half of the year. Prices on raw material are extremely firm, and the prospect of a further advance is believed to have caused a general coming out of business by those contemplating extensive improvements in order to get the benefit of the present market. Railroad work is still the chief factor, and some fair sized tonnages were taken by both the leading interest and by independents during the past

week, the Fort Pitt Bridge Co. taking 1,000 tons of material for the Northern & Pacific railroad and 2,200 tons for the Great Northern railroad, while the usual run of mill structures and elevated track work has given a fair tonnage to the other companies. We quote the market as follows:

Beams and channels, 15 inches and under, zees, 1.25c; tees, 1.25c; angles, from 3 to 6 inches, 1.25c; over 6 inches, 1.35c; universal and sheared, 1.30c; over 15 inches, 1.35c; plates, 6¼ inches wide and wider, 1.35c.

Merchant Pipe.—Two sales of line pipe during the past week indicate that there are still some round lots of pipe tonnage coming out, the market being considered fairly good and prospects excellent for the immediate future. Ten miles of 8-inch steel line pipe for West Virginia delivery were placed with Ohio mills, and ten miles of 3-inch steel line pipe for Western Pennsylvania delivery were also booked by Ohio producers. Current business in small lots continues to aggregate quite a large tonnage of oil country goods. Merchant pipe is being specified against quite freely, and merchant pipe mills are running practically to capacity with prices very firm. We quote the official discount to jobbers subject to the usual preferential discount to the larger buyer as follows:

Iron and Steel Pipe Basing Prices.

	Steel.		Iron.	
	Butt weld.			
	Black.	Galv.	Black.	Galv.
⅛, ¼ inch.....	74	54	68	48
⅜ inch	75	65	69	53
½ inch	78	68	72	59
¾ to 1½ inch.....	81	73	75	64
2 to 3 inches.....	82	75	76	65
	Lap weld.			
2 inches	79	72	72	63
2½ to 4 inches.....	81	74	74	66
4½ to 6 inches.....	80	72	73	65
7 to 12 inches.....	77	68	71	61
13 to 15 inches.....	55	..	47	..
Extra Strong, Plain Ends.				
	Butt weld.			
⅜, ¼, ⅛ inch.....	70	60	65	55
½ inch	75	69	70	63
¾ to 1½ inch.....	79	73	74	65
2 to 3 inches.....	80	74	75	66
Extra Strong, Plain Ends.				
	Lap weld.			
2 inches	76	70	71	63
2½ to 4 inches.....	81	74	74	66
4½ to 6 inches.....	77	71	72	65
7 to 8 inches.....	70	60	65	55
9 to 12 inches.....	65	55	60	50
Double Extra Strong, Plain Ends.				
	Butt weld.			
½ inch	65	59	60	52
¾ to 1½ inch.....	68	62	63	55
2 to 3 inches.....	70	64	65	57
Double Extra Strong, Plain Ends.				
	Lap weld.			
2 inches	66	60	61	52
2½ to 4 inches.....	68	62	63	57
4½ to 6 inches.....	67	61	62	56
7 to 8 inches.....	60	50	55	45

Plugged and reamed pipe is furnished at 2 points higher price, either butt or lap weld.

The above discounts are for full weight pipe, subject to a variation of 5 per cent, merchant pipe, when specified, being furnished up to 6 inches at one point higher discount (lower price).

Boiler Tubes. — Specifications are continuing very heavy for steel and seamless boiler tubes, and an improvement is noted in the charcoal iron grade. The new card issued by the leading interest which advanced the price one point with the base discount of 74 is being adhered to on new business. Independent boiler tube manufacturers are also asking the same price, and report business as much improved, while most mills are behind on deliveries. Charcoal iron tube manufacturers have not taken action regarding a corresponding advance in prices as yet. A number of mills report the subject under consideration. The official discount on steel and charcoal iron boiler tubes follows, with the usual additional 5 and 5 off:

Steel

	Steel.	Iron.
1½ inch	49	48
1¾ to 2¼ inch.....	64	50
2½ inch	66½	55
2¾ to 3¼ inch.....	71½	57½
3½ to 4½ inch.....	74	60
5 and 6 inch.....	66½	..
7 to 13 inch.....	44	

To destination east of Mississippi river will be sold at delivered discount for carloads lowered by 2 points, for lengths 22 feet and under; longer lengths, f. o. b. Pittsburgh. Usual extras to jobbers and boiler manufacturers.

Wire Products. — Specifications showed a slight falling off on wire and wire nails during the past week, although mills are easily able to operate to capacity. They are making satisfactory shipments, and in some cases are coming a little closer to consumers' requirements. The majority of the makers, however, are still behind on deliveries. New business to new customers is being quoted generally at $1.60 for wire nails, but contracts placed for $1.55 have been extended through to July 1 by some manufacturers. Most of the mills are still working on these old contracts. New business actually coming out is not important, and is not expected to show any great volume for several weeks to come. Plain wire is active both as to inquiries and specifications against existing contracts, and prices are very firm. We quote the market as follows:

Wire nails, jobbers, carload lots, $1.60; retailers' carload lots, $1.60 to $1.65; cut nails (western makers), jobbers' carload lots, $1.55 to $1.60, painted barb wire, jobbers' carload lots, $1.60; retailers' carload lots, $1.65 with 30c for galvanizing; plain wire to jobbers in carloads, $1.40; and to dealers, in carloads, $1.45; polished staples, $1.60; galvanized staples, $1.90.

Wire Rods.—Wire rods are in good demand, and new business is being taken freely for the third quarter delivery at $26 to $26.50 according to tonnage involved in the orders. We quote $26 to $26.50 for Bessemer and open-hearth wire rods.

Coke.—Spot coke has become more active, and buying for the month of June has demonstrated strongly the scarcity among the furnaces that depend on Connellsville product. A sale of 15,000 tons for June delivery has been closed at $2.25, ovens. A second sale of 12,500 tons for same delivery was closed at $2.30, while a third sale of 8,000 tons for **June** brought $2.35. During the coming month, ten blast furnaces not now active are expected to blow in, and absorb practically all the tonnage available. There is every indication that spot coke will reach a parity with contract coke under these conditions. Labor is still scarce in the coke regions, and the production for the present week, it is expected, will show a further decline over the last week owing to the intervention of a holiday, religiously observed by foreigners. Some of the coke plants suspended entirely two days as a result. There are reports of spot coke having been sold last week at below $2.25, but this is not verified. Negotiations for coke for the last half are still pending, and the operators are showing increasing firmness in their quotations of $2.50 for the last half contracts. The Connellsville Courier reports for the week ending May 18, 31,495 ovens active with a production of 398,956 tons, as compared with 31,340 ovens active and a production of 401,960 tons for the prior week. Furnace and foundry coke are in a better position for advancing prices. The demand for foundry is steady, and prices are firm at $2.75 for spot, and $2.75 to $3 for contract coke. We quote standard Connellsville furnace coke for spot shipment at $2.25 to $2.35, and contract coke at $2.50. Standard Connellsville foundry coke for spot shipment $2.75, and for contract $2.75 to $3.

Old Material.—There has been a marked improvement both in the demand and sale of old material during the past week with prices firmly fixed at $13.50 to the consumer, and some of the more important dealers hold out for $13.75. The Pennsylvania railroad has issued requests for bids on June 4 and 5 for about 20,000 tons of old rails and heavy melting stock, and about 30,000 tons of mixed scrap, all accumulated on lines east of Pittsburgh. Active bidding on this stock is expected, as the consumption is heavy and the market is pretty well drained to meet the current demand. Bundled sheet scrap is in good demand and firm at the higher price of $11.50 to $11.75. Cast borings and machine shop turnings are also scarce and firm with considerable sales reported. Low phosphorus is firm at $15 to $15.25, and

some dealers are asking $15.50. We quote gross tons delivered in the Pittsburgh district, including Monessen, Brackenridge, Steubenville and Follansbee, as follows:

Heavy melting scrap	$13.25 to 13.50
Rerolling rails	13.75 to 14.50
Malleable	12.00 to 12.50
Bundled, sheet scrap	11.50 to 11.75
Iron axles	22.00 to 22.50
Old iron rails	15.00 to 15.50
Stove plate	9.00 to 9.50
No. 1 wrought scrap	13.50 to 14.00
Old car wheels	13.25 to 14.50
Low phosphorus	15.00 to 15.25
Machine shop turnings	10.00 to 10.50
Cast borings	10.00 to 10.25
No. 1 cast scrap	12.50 to 12.75

WILL ESTABLISH PLANT

Canadian Car & Foundry Will Build at Fort William.

Toronto, May 27.—President N. Curry, of the Canadian Car & Foundry Co., announces that the company has decided to erect a plant at Fort William, Ont., requiring an investment of about $1,000,000, and employing about 1,000 men, a site having been granted by the city. Construction work is to commence in August, and it is hoped to have the plant in operation in about 15 months. It is planned with a view to an output of 7,000 steel and wood cars per year. The funds will be raised by a bond issue.

The Louisville & Nashville Railway Co. which is to build an extension to Irvine, Ky., has announced that shops will be built at that city. W. H. Courtney of Louisville is chief engineer of the company.

CHICAGO

Market Firm---Prices Tending Upward

Office of THE IRON TRADE REVIEW,
1328 Monadnock Blk., May 28.

The mills continue to run behind on deliveries, which are the paramount issue of the situation. The period for delivery in some cases has been extended to the middle of October. The market continues very firm with a tendency toward higher quotations, the independent attitude of producers being indicated by the fact that in some few instances orders are being considered separately according to the needs of each individual case rather than with reference to general market conditions. One leading producer is making no contracts at the present quotation for delivery later than the latter part of September. The continued buying by the railroads indicates a considerable bulk of new business which should culminate in about three weeks. The crowded condition of the mills precludes the possibility of new business being actively sought for some time to come. The leading interest is the most prominent factor on structural material, having taken 64 per cent of the week's business. This, however, does not necessarily indicate a successful attempt to strengthen the market, as none of the independents are in a position to consider short-time deliveries.

Pig Iron.—The market is characterized by a continued lack of activity, the number of inquiries being an almost negligible quantity. Practically the only sales during the week were 500 tons of Southern No. 2 to a Moline foundry at $15.85, Chicago, and a small tonnage to a Wisconsin foundry at the same figure. There is an inquiry in the market for 250 tons of 8 per cent silicon and a Chicago steel foundry is in the market for 2,500 tons of basic. There is also some small inquiry for malleable. Prices continue firm with a tendency toward higher quotations for last half delivery.

The following prices represent the market for Chicago delivery, except Northern foundry No. 2 and malleable Bessemer, which are quoted f. o. b. local furnaces:

	Third quarter.	Last half.
Lake Superior charcoal	$15.75	15.75
Northern foundry No. 2	14.50	14.50
Southern foundry No. 2	15.35	15.85
Southern silv'ries, 5 per cent sil.	16.10	16.35
Jackson co. silveries, 8 per cent	17.90	17.90
Malleable Bessemer	14.50	14.50
Alabama basic	15.35	15.60

Billets.—There is a continued scarcity of billets in the market and a comparatively good number of small orders, with prices remaining firm. A consumer in this territory inquired for 1,000 tons of billets and several independent mills were unable to take care of the orders at present. We quote, open-hearth forging billets, $28, Chicago; re-rolling billets, $24.50.

Merchant Bars.—Bar iron continues firm at 1.25c, Chicago, and the mills are still running behind on deliveries. The tendency of the market is indicated by the fact that some orders for delivery between September and January have been taken at, 1.30c, Chicago. The general steel situation shows very little change over the prevailing conditions of last week and producers are able to make deliveries in no shorter time. Shafting continues firm at 65 per cent off list for carloads, and 62 per cent for less than carloads. Further expansion in the demand for material for concrete reinforcing is evident and no new business of this nature is being sought.

The demand for steel bars out of store is heavier and store prices are showing considerable firmness.

We quote, f. o. b. Chicago, as follows:

Bar iron, 1.25c; hard steel bars, rerolled, 1.25c to 1.30c; soft steel bars, bands and small shapes, 1.38c base; hoops, 1.48c; smooth finished machinery steel, 1 inch and larger, 1.78c; shafting 65 per cent off list for carload lots, 62 per cent off for less than carloads.

On iron and steel from local stock we quote as follows:

Bar iron, 1.50c to 1.60c per pound base; soft steel bars, 1.60c to 1.65c per pound base; soft steel hoops, 1.80c to 1.90c, full extras.

Structural Material.—No betterment in the condition of fabricating prices is evident. The contractors still are burdened with prices that are out of harmony with the conditions on shapes and plates, and some business is being taken which nets a very small margin of profit. The total tonnage let last week amounts to 11,052 tons, 64 per cent of which was taken by the leading interest. Prices continue firm. A Wisconsin bridge company has asked for protection on about 8,000 tons of plain material, which indicates that there is considerable work in prospect. A contract has been let by the state of Washington for 352 tons for a draw bridge at Riverside, Wash.; 111 tons for a garage by Lee Stewart, Rockford, Ill., and 102 tons for a train shed for the Union Station at Joliet, have also been placed. The American Bridge Co. has taken a

contract for 5,405 tons from the Chicago, Milwaukee & St. Paul for a viaduct over the Des Moines river and 124 tons for the College of St. Theresa, Winona, Minn. The same fabricator has also taken 103 tons for a high school building at Biwabik, Minn.; 167 tons of bridge work from San Luis Obispo county, Cal.; 504 tons of bridge work from the state of Washington; 770 tons from the Chicago Great Western; 250 tons for a coal-handling bridge at Detroit, from the Semet-Solvay Coke Co., and 1,485 tons for a hot bed building at Duluth for the Minnesota Steel Co. The South Halsted Iron Works, Chicago, has taken 368 tons of structural material from the Carter White Lead Co. for a building at Pullman, Ill., and the Milwaukee Bridge Co. has taken 70 tons for a Milwaukee corrugating plant, and also 120 tons from the T. C. Keller Coal Co. for a coal storage plant at Sesser, Ill. The Joliet Bridge & Iron Co. has taken a contract for 800 tons for Koppers coke ovens for the Woodward Iron Co., at Woodward, Ala. Other contracts let during the week are: 170 tons placed by the John A. Rowe Cut Stone Co., for a mill building at Bedford, Ind.; 211 tons by the Kelley-Atkinson Construction Co., for an arch and 110 tons let by the State Historical Society of Wisconsin for a library building at Madison, Wis.

We quote, mill prices, f. o. b. Chicago, as follows:

Beams and channels, 15 inch and under, 1.43c. For extras, see Pittsburgh report.

Store prices are as follows:

All angles, 3 inches and larger, including 6 inches, $1.70 to $1.75 per 100 pounds; angles over 6 inches, $1.75 to $1.80 per 100 pounds, base; beams, 3 to 15 inches, inclusive, $1.70 per 100 pounds, base; channels, 3 inches and larger, $1.70 per 100 pounds, base.

Rails and Track Fastenings.—It is understood that the Illinois Central railroad is in the market for 25,000 tons of rails and the C., B. & Q. railroad has placed an order for 10,000 kegs of spikes with the Colorado Fuel & Iron Co. There appears to be no other new business in the market. The situation, however, is satisfactory to the producers and there is sufficient business on their books to keep the mills in operation for some time to come.

We quote, light rails, f. o. b. Chicago, and track fastenings, f. o. b. Joliet, as follows:

Light rails, carloads, 25 to 45-pound, 1.20c to 1.25c; 16 to 20-pound, 1.25c to 1.30c; 12-pound, 1.30c to 1.35c; 8-pound, 1.35c to 1.40c.

Light section relayers, 45 pounds and under, subject to inspection $21 to $23; standard section relaying rails, subject to inspection, $23.50 to $24.

Track fastenings, f. o. b. Joliet, angle bars, 1.50c; railroad spikes, 1.55c to 1.60c, smaller size spikes, 1.65c, base; track bolts with square nuts, 1.95c to 2.05c base.

Plates.—The market shows but little change over the previous week, the principal feature in the situation being the difficulty in making deliveries. Mills continue to run behind on orders and the earliest date for which delivery on plates is being promised is the middle of September. Some producers are extending this period 30 days. The market is firm and the general situation indicates a material advance in prices in the very near future. The Wabash railroad has ordered five all-steel mail cars from the American Car & Foundry Co. The same manufacturer has also taken an order for 1,000 coal cars from the St. Louis & San Francisco; this is in addition to an order for 6,000 cars placed previously. The Missouri & Northern Arkansas has bought 100 box cars also from the American Car & Foundry Co., and is in the market for three coaches, two mail cars, three combination cars, 50 furniture cars and 50 flat cars.

We quote, f. o. b. Chicago, as follows:

Tank plates, ¼ inch thick, 6⅝ to 100 inches wide, 1.43c. For extras, see Pittsburgh report.

Store prices are as follows:

Tank steel, ¼ inch and heavier, up to 72 inches wide, $1.70.

Sheets.—Prices continue very firm with some indication of an advance and no amelioration of the crowded condition of the mills is evident. The large number of orders being received by car builders indicates a continuation of heavy buying.

We quote, store prices, as follows:

Blue annealed, No. 10, 2.00c; No. 12, 2.05c. Box annealed, No. 28, 2.35c. Galvanized, No. 28, 3.45c.

For mill prices, see Pittsburgh report. Freight to Chicago, 18 cents.

Wire Products.—The weather conditions throughout the west have been very favorable recently, indicating increased movement of agricultural wire. The tone of the western market continues firm on a basis of 1.60c, Pittsburgh, although many of the contracts for cheap tonnage have not been filled.

We quote, f. o. b. Chicago, as follows:

Wire nails, jobbers' carload lots, $1.78; retailer's carload lots, $1.88; retailers' less than carload lots. $1.98; painted barb wire, jobbers' carload lots, $1.78; retailers' carload lots, $1.88; retailers' less than carload lots, $1.98, with 30c for galvanizing; plain wire, jobbers' carload lots, $1.58; retailers' carload lots, $1.63.

Merchant Pipe and Tubes.—The local market for merchant pipe continues firm with a fair demand for common sizes. Most of the iron pipe manufacturers are having considerable difficulty in making deliveries. Specifications on boiler tubes are very heavy and new business is considerably improved.

We quote, store prices on merchant pipe and tubes, f. o. b. Chicago, as follows:

Iron and Steel Pipe Basing Prices.

	Steel.		Iron.	
	Black.	Galv.	Black.	Galv.
Butt.				
⅛ inch and ¼ inch.	71.2	50.2	63.2	42.2
⅜ inch	75.2	64.2	68.2	52.2
½ inch to 1½ inch..	78.2	69.2	71.2	59.2
Lap.				
2 inch	76.2	68.2	68.2	58.2
4½ inch to 6 inch..	77.2	68.2	69.2	60.2
Card Weight.				
7 inch to 12 inch...	74.2	63.2	67.2	56.2
Extra Strong Plain Ends.				
Butt.				
⅛, ¼, ⅜ inch.....	66.2	54.2	60.2	48.2
½ inch	71.2	59.2	65.2	53.2
2 inch to 3 inch....	76.2	64.2	....	....
Lap.				
2 inch	72.2	60.2	66.2	54.2
7 inch to 8 inch....	66.2	54.2	60.2	48.2
Double Extra Strong.				
Butt.				
½ inch	59.2	47.2	....	....
¾ inch to 1½ inch.	62.2	50.2	....	....
Lap.				
2 inch	60.2	48.2	....	....
4½ inch to 6 inch..	61.2	49.2	....	....
7 inch to 8 inch....	54.2	42.2	....	....

Tubes.

	Lap weld steel.	Charcoal iron.	Shelby seamless.
	Per cent.	Per cent.	Per cent.
1 inch	39	..	57½
1¼ to 2¼ inch.....	55	40	35
2¾ to 3¼ inch.....	65	50	46
3½ to 4½ inch.....	67½.	50	46
5 to 6 inch.....	55	..	..

Cast Iron Pipe.—The market shows little change compared with the previous week, although some new business is in prospect. The city of Omaha is in the market for 6,000 tons of 4-inch pipe and Sioux City, Ia., has placed 300 tons with the American Cast Iron Pipe Co., Birmingham, Ala. The city of Decatur, Ill., has opened bids for 300 tons of pipe, on which the U. S. Cast Iron Pipe & Foundry Co. is low bidder.

We quote, f. o. b. Chicago, as follows:

Four-inch water pipe, $27.00, 6 to 12 inches, $25.00, larger sizes, $24.50; gas pipe, $1 a ton higher.

Old Material.—No new features are presented in the scrap market and there is practically no change in prices. The Rock Island railroad has issued a list amounting to 4,838 tons, on which bids will be opened May 31. The principal items are 1,000 tons of No. 1 railroad wrought; 800 tons

of No. 1 steel rails; 400 tons of No. 1 cast and 200 tons of No. 3 steel rails. Sales of No. 1 wrought continue at $13, Chicago. Railroad malleable and iron angle bars are somewhat firmer.

We quote for delivery in consumers' yards, Chicago, as follows:

Gross Tons.

Old car wheels	$13.25 to 13.75
Old iron rails	16.50 to 17.00
Rerolling rails (5 ft. and over)	13.00 to 13.50
Old steel rails (3 ft. and under)	12.25 to 12.75
Frogs, switches and guards	12.00 to 12.50
Heavy melting steel	12.00 to 12.50
Shoveling steel	11.75 to 12.25

Net Tons.

No. 1 R. R. wrought	$12.75 to 13.25
No. 2 R. R. wrought	11.75 to 12.25
Arch bars and transoms	15.00 to 15.50
Knuckles, couplers and springs	11.50 to 12.00
Shafting	14.50 to 15.00
Iron car axles	19.00 to 19.50
Steel car axles	15.75 to 16.25
Locomotive tires	13.50 to 14.00
Dealers forge	10.00 to 10.50
Pipe and flues	9.00 to 9.50
No. 1 cast	12.00 to 12.50
No. 1 busheling	10.00 to 10.50
No. 2 busheling	7.25 to 7.75
No. 1 boiler cut	8.25 to 8.75
Boiler punchings	12.50 to 13.00
Cast and mixed borings	6.50 to 7.00
Machine shop turnings	7.25 to 7.75
Railroad malleable	11.75 to 12.25
Agricultural malleable	10.50 to 11.00
Angle bars, splices, etc., iron	14.00 to 14.50
Angle bars, steel	11.50 to 12.00
Stove plate and light cast scrap	10.30 to 10.50

PHILADELPHIA

Premiums for Eastern Plates for Chicago Shipment

Office of THE IRON TRADE REVIEW,
Philadelphia, May 28.

Market conditions of finished iron and steel show a moderation of new business with some eastern mills. Orders entered on contract, however, are heavy and the scale of production is upward. The Pennsylvania Steel Co. next week will put on two idle furnaces at Steelton and will then have that group in full operation. Eastern mills are shipping plates to Chicago at a $2 premium. The pig iron market shows a good sprinkling of round lot purchases and inquiries. Advances by individual makers continue. Scrap is quiet, but fairly staple.

Pig Iron.—A considerable volume of business continues to be done in the eastern market, but the situation in coke prices still interferes with free selling by a number of the furnaces through last half. Some makers are taking the position that unless they are able to get for last half at least 50 cents above the present price level of iron, or unless coke prices recede, they will be obliged to blow out. This attitude is reflected in the case of one Lehigh valley maker, which has advanced the schedule to $15, furnace, for No. 2X, or $15.75, Philadelphia. This is about 50 cents above the average level of the market. Stove makers have recently been buying freely for last half delivery in this district and Baltimore and have closed for about 5,000 to 6,000 tons. On some lots, $15, delivered, was shaded, but the average price delivered in this district was around $15.25 for No. 2X. Some small lots of No. 2X have been selling in Philadelphia and vicinity at $15.50, delivered. The Pennsylvania railroad is inquiring for 2,100 to 4,200 tons of forge, 1,000 to 2,000 tons of No. 1 and 1,200 to 2,400 tons of charcoal, or 4,300 to 8,600 tons in all for third quarter, at Altoona. Bids are going in this week. This buyer usually closes for maximum quantities. The Norfolk & Western railroad is expected to close this week for 4,500 tons for Roanoke. Pipe iron commands a ready market around $14.75, delivered, for the first class grades. One pipe maker is out for 2,000 to 3,000 tons for a western Pennsylvania plant. In steel making grades, one eastern consumer has closed for 6,000 tons of basic for shipment largely in the third quarter at $15.10, delivered. This price represents a furnace equivalent of about that of most recent sales, but most makers ask $15.25, delivered. Another eastern steel maker has taken 3,000 tons of standard Bessemer at $16.25, delivered, to be furnished by an eastern furnace. It also concluded the final details with another eastern furnace for a round block of low phosphorus iron for forward shipment. Low phosphorus tonnage in the east during the past several months has been very liberal and one maker has about 30,000 tons now upon its books.

We quote for prompt and third quarter delivery at consumers' plants in Philadelphia and vicinity as follows:

Eastern Pa. No. 1X foundry	$15.35 to 15.50
Eastern Pa. No. 2X foundry	15.10 to 15.35
Eastern Pa. No. 2 plain	14.75 to 15.00
Standard gray forge	14.50 to 14.75
Basic (Eastern and Central Pa.)	15.00 to 15.25
Virginia No. 2X	15.80
Southern No. 2	15.00 to 15.25
Standard low phosphorus	19.75 to 20.00

Finished Material.—Some reports of slightly slackened movement in new business are coming from eastern manufacturers, but the volume of new entries remains satisfactory and specifications are active. Production is still on the increase and the Pennsylvania Steel Co. will blow in two idle furnaces at its Steelton plant early in June, which will make the full group active. The blowing Worth furnace at Coatesville has gone out temporarily for repairs. Pig iron stocks in mill yards continue to dwindle.

Eastern mills are still profiting from the heavily-sold condition of middle western plants and the inability of the latter to make prompt deliveries. Eastern Pennsylvania plate mills have been shipping plates into Chicago territory because of earlier deliveries offered at 1.53c, Chicago, or the equivalent of $2 a ton premium over the Pittsburgh freight plus 1.25c, base. Plates are firm in the east at 1.25c, Pittsburgh, and eastern shape makers are now more generally adhering to this price on general market business, though the very large buyers could still probably shade this figure. Bars are holding well. Charcoal iron boiler tubes have been advanced by eastern makers and rivet prices have also been raised.

The McClintic-Marshall Construction Co. has taken about 1,500 tons for the extension of the Cramp ship yard and about 1,200 tons for a new mill building for the Alan Wood Iron & Steel Co., Ivy Rock, Pa. The Cambria Steel Co. has finally been awarded the Vendig hotel, this city, but the steel plans have been revised to from 1,200 to 1,300 tons. The Norfolk & Western railroad recently placed with a Pittsburgh mill about 5,000 tons of shapes, plates and bars for 500 cars to be built at Roanoke. The Chesapeake & Ohio has issued plans for bids, June 3, for a large pier at Newport News, Va., to require 8,000 to 10,000 tons, and is also out for 500 center sills, or about 1,500 tons. The Miners' National

Bank building, Wilkesbarre, Pa., 1,000 tons, is up for bids. The Wallerstein hotel, Richmond, is held up and the Bellevue-Stratford garage, this city, has been temporarily abandoned. The Atlantic Refining Co. has one small building out and will shortly put out plans for another.

Some fair transactions in semi-finished steel are noted. A leading eastern Pennsylvania buyer recently closed with an eastern mill upon its requirements of billets over the last half, estimated at 10,000 to 12,000 tons, and another consumer is inquiring for 1,000 tons. Prices are strong.

We quote, delivered in Philadelphia and vicinity, as follows:

Plain structural shapes, 1.35c to 1.40c; tank plates, 1.35c to 1.40c; steel bars, 1.35c; common bar iron, 1.30c to 1.35c; cut nails, 1.65c to 1.70c; blue annealed sheets, No. 10 gage 1.55c to 1.60c; 4 x 4-inch open-hearth rolling billets, $23.40 to $24.40; forging billets, $27.40 to $28.40. Extras shown under Pittsburgh report. Philadelphia warehouse prices 1.75c for plates, shapes and bars.

Old Material.—Leading eastern consumers having bought liberally are now staying out of the market and trading is quiet. Buyers in many grades will meet dealers at the minimum level of the quoted range and some business is being done. The dealers, however, show that they are disposed as a rule to wait for the mills to again enter the market. The iron mills are especially opposed to paying asked prices for rolling mill wrought, declaring that raw materials have more than absorbed the advance in finished products.

We quote, gross tons, delivered at consumers' plants in eastern Pennsylvania or western New Jersey, as follows:

Old iron rails	$16.50 to 17.00
Old steel rails (rerolling)	14.75 to 15.25
No. 1 heavy melting steel	13.50 to 14.00
Old car wheels	13.75 to 14.00
Old iron axles	23.00 to 24.00
Old steel axles	17.50 to 18.00
No. 1 railroad wrought	16.00 to 16.50
Wrought pipe	12.50 to 13.00
Cast borings	9.00 to 9.50
Machine shop turnings	10.00 to 10.50
Heavy cast	13.50 to 14.00
Malleable	11.75 to 12.25
Stove plate	10.50 to 11.00
No. 1 forge	12.00 to 12.50

Freight rates per ton on scrap from Philadelphia to principal eastern consuming points are: $0.60 to Ivy Rock, Pa.; $0.65 to Phoenixville, Pa.; $0.80 to Coatesville, Pa.; $0.85 to Bethlehem, Pa., Reading, Pa., and Roebling, N. J.; $1.10 to Pottsville, Pa., Lebanon, Pa., and Columbia, Pa.; $1.20 to Harrisburg and Steelton, Pa.; $1.40 to Milton, Pa.

NEW YORK

Quiet Iron Buying---Finished Prices Firmer

Office of THE IRON TRADE REVIEW,
1115 West Street Bldg., May 28.

Iron Ore.—A recent sale of 20,000 tons of Spanish 48 per cent natural ore is reported at 7¼ cents f. o. b. cars Philadelphia, which is an advance of a quarter of a cent per unit. Ocean freights are on a relatively high key with steamers very scarce, and any important tonnage demand would be likely to advance freight rates. The opinion obtains that appreciable tonnages of trans-Atlantic foreign ores will not be forthcoming except at about 8 cents a unit, tidewater. Another small cargo of Venezuelan ore has arrived and is being distributed and some further lots will be brought in later in the year and tried out by eastern furnaces. There continues selling of eastern local ores at the rate of about 50,000 tons monthly and at prices ranging from 7 to 7¼ cents per unit, delivered.

Pig Iron. — The most prominent feature of the week's market has been the quiet closing for some round lots of iron by heavy consumers in this district. These purchases in all have aggregated about 20,000 tons, including one lot of 6,000 to 8,000 tons and one of 5,000 tons, both foundry grades and another of about 5,000 tons of special analysis material. The business was well divided between Buffalo and Lehigh valley makers and the delivery periods were third quarter and last half. A Lehigh valley maker, on a lot of 5,000 tons of foundry iron, was able to obtain a 50-cent advance over a smaller sale, made to the same buyer several weeks ago. Lehigh valley iron sold in the week at $14.75, furnace, for No. 2X, or about $15.50, tidewater. A sale of 750 tons for forward shipment on this basis is noted. One maker of that district, which has advanced to $15.00, furnace, or $15.70, tidewater, has made some small sales on this basis. The standard No. 2X market in the Lehigh and Schuylkill valleys seems to have hardened around $15.75, furnace. Buffalo iron seems inclined higher and an advance of minimum prices to a $13.75 price for No. 2X would not be unexpected. Sales by canal shipment have been made at about $15.25, alongside, this district, with charters around $1.50, although water rates have been slightly lower in some cases. Apart from the quiet buying under way, the market is only moderately active. One large buyer is sounding out prices for a fair sized tonnage and a New Jersey machinery builder is out for 1,800 tons of No. 2 plain and No. 2X for third quarter. We quote at tidewater for prompt and third quarter shipment as follows, southern and Virginia iron being given at New York docks:

Northern foundry No. 1	$15.50 to 15.75
No. 2X foundry	15.25 to 15.50
No. 2 plain	14.75 to 15.00
No. 2 Virginia	15.80 to 16.05
No. 2 southern foundry	15.00 to 15.25
Malleable	15.25 to 15.50
Gray forge	14.50 to 14.75

Ferro-Alloys. — Following considerable buying of ferro-manganese for forward shipment at $48.50, seaboard, sellers are less disposed to make sales on this basis, particularly for this year's delivery. In several cases, business offered at this price has been declined. The largest part of the buying recently done, which reached 5,000 to 10,000 tons, was for first half. Prompt ferro in small lots was sold in this market this week at $58.00, seaboard. Several carload inquiries for 50 per cent ferro-silicon are current. We quote standard ferro-manganese for forward shipment at $48.50, seaboard, and for prompt shipment $55.00 to $58.00, and 50 per cent ferro-silicon at from $68.00 to $70.00, Pittsburgh.

Cast Iron Pipe.—Recent competitions show a hardening tendency of cast iron pipe prices, but in the absence of public lettings, the extent of this advance is not clearly known. The market generally manifests more strength, however, and conditions are more satisfactory, due in a large part to the liberal buying by gas and water companies, which continues on a heavy scale. We quote 6-inch pipe at from $21.00 to $22.00, f. o. b. New York, in carload lots, some makers asking up to $23.00.

Finished Material. — Buyers apparently are feeling the effects of keener pressure for deliveries that the mills are working, for they are following up their shipments more carefully and complaints at the slow-

er movement of materials are more numerous. Eastern mills are showing more and more a better condition of new bookings and operations and prices are appreciably firmer. Where shapes have been rather freely sold in recent weeks at 1.20c Pittsburgh, or 1.36c, New York, the market has now advanced and is holding generally even at 1.25c, Pittsburgh, subject only to such shading as might be done by the very largest buyers. Plate makers are readily getting 1.25c, Pittsburgh, on regular business and higher on small lots. Steel and bar iron prices are holding firm.

Semi-finished steel shows much strength in the east and rolling billets of regular analysis have sold at $26 and higher, New York. Offers of $22, Pittsburgh, or $24.60, New York, have been declined. A Bridgeport, Conn., buyer which was in the market for 10,000 to 15,000 tons of billets decided not to close at the prices asked, but instead bought basic pig iron which it will work up into steel. Sheet bars are also very strong and consumers are having some trouble to get prompt deliveries against contracts.

Probably 50,000 tons of structural steel is represented by pending contracts in New York and New England and south eastern markets. In New York, the volume of strictly new contracts offered is not so large. No authoritative announcement has been made as to the contract for the Biltmore Hotel, 14,000 tons, though various rumors are afloat. Among the week's awards are 2,500 tons to the American Bridge Co. for the Flemish Realty Co. loft on East Twenty-sixth street, this city; 2,000 tons to the Hay Foundry & Iron Works, for the Kinney Realty Co. store and office building, Newark, N. J.; 1,300 tons for the Realty Holding Co. loft at Twenty-ninth street and Fourth avenue, this city, 800 tons for an additibn to the General Electric Co., Pittsfield, Mass., and 350 tons for a factory building for the National Equipment Co., Springfield, Mass., all to Levering & Gerrigues and 300 tons to the Belmont Iron Works for an apartment for McIlvaine & Co., in Philadelphia. Final action on the Chatham Realty Co. loft on West Thirty-fifth street, 1,300 tons, reported to have gone to Levering & Gerrigues, is held up. The Thompson-Starrett Co. has the general contract for the Turk's Head building, Providence, R. I., 2,500 tons and the steel work will go to the New England Structural Co. The Great Eastern Construction Co. has the general contract for the Standard Meter Co. building, this city, 3,200 tons. The steel work is still open. In railroad work, the New York, Ontario & Western has placed 1,900 tons of bridges with the American Bridge Co. and the Central of New Jersey, 200 tons with the same fabricator for a small bridge at Ashley, Pa. The Pennsylvania has a small amount of bridge work out for track improvements near Colonia and Rahway, N. J., about 300 tons. We quote, delivered at New York tidewater, as follows:

Plain structural shapes 1.36c to 1.41c; tank plates, 1.41c; steel bars, 1.36c; common iron bars, 1.32c to 1.37c; steel bars from store, 1.80c; plates and shapes from store, 1.90c; extras as shown under Pittsburgh report.

Rails and Track Material.—Leading eastern railroad systems have been closing for their last half requirements of standard spikes and about 100,000 kegs have recently been closed for by the New York Central, Baltimore & Ohio, Erie, Seaboard Air Line and other systems. Standard spikes on contract are holding firmly to the recent advance of 1.45c Pittsburgh, but for prompt shipment this could probably be shaded to 1.40c. The supplemental rail order placed by the Harriman lines proves to have been considerably less than originally reported and will amount to only about 14,000 tons. The division of this gives 4,900 tons to the Illinois Steel Co., 4,500 tons to the Maryland Steel Co. and 4,500 tons to the Colorado Fuel & Iron Co.

Old Material.—While some scrap houses have moved a record-breaking tonnage during the past month and are still shipping freely, new orders are fewer and the market is quieter. Some buyers seem to have all the material coming in they can handle. Stove plate shipments have been held up in some directions and an embargo has been declared against one of the Harrisburg steel plants. Sales are noted of 1,000 tons of heavy steel to eastern Pennsylvania at $13.50, delivered, of a lot of wrought pipe to the same district at about $12.50, delivered. New England buyers have been offering about $13.25 for car wheels. New Jersey foundries have lowered their offers on heavy cast to $11.75 to $12, delivered. We quote, gross tons, prices New York dealers will pay at tidewater, as follows:

Old car wheels	$11.25 to 11.75
Old iron axles	16.50 to 17.00
Old steel shafting	14.00 to 14.25
No. 1 heavy melting steel	11.00 to 11.25
No. 1 R. R. wrought	13.25 to 13.50
Wrought pipe	9.75 to 10.00
Cast borings	7.00 to 7.25
Machine shop turnings	8.00 to 8.25
Heavy cast	11.00 to 11.50
R. R. malleable	9.50 to 10.00
Stove plate	8.25 to 8.75
Grate bars	7.25 to 7.75

Freight rates on scrap per ton to Steelton, Pa., Columbia, Pa., Pottsville, Pa., and Harrisburg, Pa., are $1.50 from Jersey City and $2.00 from New York; to Coatesville, Pa., Ivy Rock, Pa., Phoenixville, Pa., and Reading, Pa., $1.50 from Jersey City and $1.80 from New York; to Bethlehem, Pa., $1.10 from Jersey City and $1.60 from New York; to Roebling, N. J.; $1.00 from Jersey City and $1.50 from New York; to Milton, Pa., $1.60 from Jersey City, and $2.00 from New York.

ST. LOUIS

Round Tonnage of Southern Basic Sold

Office of THE IRON TRADE REVIEW,
St. Louis, May 28.

Pig Iron.—The market was stimulated in the St. Louis territory Saturday by the purchase of 10,000 tons of southern basic by the Scullin-Gallagher Iron & Steel Co., and about 1,000 tons of various grades of iron in small lots. With the exception of an inquiry for 20,000 to 30,000 tons of basic from the American Steel Foundries for delivery to its plant in Granite City, Ill., which has been pending 10 days or more in Chicago, requests for iron have dropped to carload lots for quick shipment. Prices are virtually unchanged, southern No. 2 ranging at $11 to $11.25 for prompt shipment and even delivery over the last half, while some dealers are demanding $11.50 for last quarter.

Our prices on southern iron, delivered, to which the freight of $3.75 has been added, follow:

Southern No. 1	$15.25 to 15.75
Southern No. 2	14.75 to 15.25
Southern No. 3	14.25 to 14.75
Southern No. 4	13.75 to 14.25

Coke.—The sale of 6,000 tons of foundry coke, reported in *The Daily Iron Trade Review* the latter part of last week, was the largest coke transaction that has taken place in the St. Louis territory recently. Inquiries pending are for small lots for quick shipment. Prices remain unchanged as follows:

We quote 72-hour Connellsville foundry grades, $2.50 to $2.65 for second quarter of 1912; 72-hour foundry, $2.25 to $2.50 on tracks and $2.75 to $2.85 for immediate delivery; 48-hour Connellsville furnace, $2 to $2.25; best 72-hour Virginia foundry, $2.50 to $2.75; 48-hour Virginia furnace, $2 to $2.25. The freight to East St. Louis and St. Louis is $2.80, and $2.70 from the Virginia

fields when shipment is destined beyond St. Louis.

Structural Material. — Local contractors are sending out inquiries for 1,000 tons of re-inforcing bars for work to be done in Cincinnati, and shipments of small orders have been quite brisk. Plates are firm, quick shipments are hard to get, and deliveries are more extended. Bars are in good demand and prices are strong.

Agricultural iron is in demand for quick shipment, but the wagon people are slow to order as a result of the effect of flood conditions. Standard rails are fairly active, and the C. & E. I. railroad has placed an order for 10,000 tons of standard grades that has been pending quite a long time. Tentative orders for 25,000 to 30,000 tons of standard rails are pending. Track fastenings are quite active, prices are strong and sales up to date have amounted to almost a year's business. For light rails there is very little demand.

Old Material.—Not much is being done in scrap iron, consumers seeming to look for bargains and dealers holding out for better prices. The C. & E. I. railroad placed an order Saturday for 400 tons at top prices. We quote prices consumers are willing to pay, f. o. b. St. Louis, to which 30 cents a ton should be added for East St. Louis delivery, which consumers are willing to pay, as follows:

Gross Tons.

Old car wheels	$13.50 to 14.25
Old iron rails	15.25 to 15.50
Re-rolling rails (5 ft. and over)	13.25 to 13.75
Old steel rails (3 ft. and under)	12.25 to 13.25
Light section relayers (45 lb. and under) subject to inspec.	21.50 to 22.50
Re-laying rails, subject to inspec.	22.50 to 23.25
Frogs, switches and guards	10.50 to 11.25
Heavy melting steel	11.50 to 12.25
Shoveling steel	10.75 to 11.25

Net Tons.

No. 1 railroad wrought	$11.50 to 12.00
No. 2 railroad wrought	10.50 to 11.00
Arch bars and transoms	14.25 to 14.50
Knuckles, couplers and springs	10.50 to 11.00
Shafting	14.00 to 14.50
Iron car axles	18.50 to 19.00
Steel car axles	16.00 to 16.50
Locomotive tires	11.50 to 12.00
No. 1 country wrought	9.25 to 9.75
Pipe and flues	8.50 to 9.00
Tank iron and cut boilers	7.50 to 8.00
No. 1 cut busheling	9.25 to 9.75
No. 2 cut busheling	6.25 to 6.75
Cast and mixed borings	6.25 to 6.50
Machine shop turnings	7.00 to 7.25
Railroad malleable	10.50 to 11.00
Agricultural, malleable	9.50 to 10.00
Stove plates	9.50 to 10.00
Angle splice bars (iron)	11.25 to 12.00
Angle splice bars (steel)	9.50 to 10.00

CINCINNATI

Northern and Southern Pig Iron Quiet

Office of THE IRON TRADE REVIEW,
503 Mercantile Library Bldg., May 28.

Pig Iron.—The pig iron market in this territory is practically stationary. Some furnaces in the Ironton district have been making an effort to bring the price of southern Ohio No. 2 foundry iron back to $13.50, furnace, but have been unsuccessful owing to the small demand and the unwillingness of buyers to pay more than $13.25 for this grade. In many instances, users are refusing to close for $13.25, claiming that they can get the iron below this price in this same district. It is known that several fairly good contracts have been made with melters in this territory during the past week, on a basis of $13, Ironton. The southern market is moving along in the same way that it has for the past two or three weeks. The price for southern No. 2 foundry iron is still $11, Birmingham, and it is not known that any business is being done below this figure. Most furnaces are holding for from $11.25 to $11.50, Birmingham, for the last half, but very little, if any iron is being sold at the latter figure. Several good sales are reported to have been made during the past week at $11 for the last half, and it is known that certain furnace interests will consider this price through the third quarter and in some cases through the fourth. It is also noticed that iron that sells for $11.25 in the Birmingham district will bring only about $11 in the Cincinnati territory because of more competition.

Both the northern and southern situations are quiet, and for this reason they cannot be given a good test as to quotations. Several dealers here report that they are doing a fairly good business on the quiet in the way of small sales in scattered lots. The Globe Iron Co., at Jackson, O., which will blow out soon for repairs, has notified the market here that the price of its 8 per cent silicon iron is $16.50, furnace, but the general quotations on this grade are from $15.50 to $16, furnace, and it is reported by some dealers that they have lost business by quoting $16.

The rumor that a northern Ohio maker has taken over the Miami furnace, at Hamilton, O., is officially denied.

It is known that several large users in and around Cincinnati have not closed as yet for their last half requirements, and their inquiries are being awaited by dealers here. There have been several good inquiries in this territory for ferro-manganese, and silvery iron has also been selling in fair lots. With freight rates $3.25 from Birmingham and $1.20 from Ironton, we quote Cincinnati prices as follows:

Southern foundry No. 2	$14.25 to 14.50
Southern foundry No. 3	13.75 to 14.00
Southern foundry No. 4	13.50 to 13.75
Southern gray forge	13.00 to 13.25
Mottled	12.25 to 12.50
Southern No. 1 soft	14.25 to 14.50
Southern No. 2 soft	13.75 to 14.00
Standard southern car wheel	25.25 to 25.50
Northern No. 2 foundry	14.45 to 14.70
Northern No. 3 foundry	13.95 to 14.20
Northern No. 4 foundry	13.45 to 13.75
Jackson co. 8 per cent silicon	16.70 to 17.20

Coke.—The coke market is unchanged and prices are firm. Furnace coke is selling in good lots, but users of foundry coke have not as yet generally begun to buy actively. It is reported that approximately 30,000 tons of furnace grades have been sold in the Connellsville district this month, and that a contract has been closed for furnace coke to be delivered at the rate of 12,000 tons a month over the last half of the year on the basis of $2.50, ovens. It is generally thought, however, that certain special conditions must have governed this latter sale, as furnace coke can be had at from $2.25 to $2.35, ovens. Makers are showing an inclination to increase the output of furnace coke as long as they can sell it at the present prices, even if they are forced at the same time to reduce their make on 72-hour grades. The scarcity of labor which has been a source of trouble for some time, still prevails. Profitable selling of coal instead of turing it into coke continues in some districts. It is generally conceded that prices on practically all grades will hold and perhaps go higher, and users of foun-

dry coke, who have been holding out to the last minute before renewing contracts, hoping that prices would weaken, are beginning to buy. This movement should extend in better volume throughout June, as most contracts expire by July 1, and many large melters have not as yet contracted. We quote from the leading coke producing districts as follows:

	Prompt shipment.	Contract second half.
Connellsville district:		
Foundry coke	$2.50 to 2.75	$2.50 to 2.75
Furnace coke	2.25 to 2.40	2.25 to 2.40
Wise county district:		
Foundry coke	$2.50 to 2.75	$2.50 to 2.75
Furnace coke	2.00 to 2.25	*Sliding [scale basis
Pocahontas district:		
Foundry coke	$2.50 to 2.90	$2.50 to 2.90
Furnace coke	1.85 to 2.25	1.85 to 2.25
New river:		
Foundry coke	$3.00 to 3.25	$3.00 to 3.25
Furnace coke	2.35 to 2.50	2.35 to 2.50

*Sliding scale basis means $1.60 for coke based on $9, Birmingham, for pig iron, with an advance of 16 2-3 per cent of the amount over $9 which pig iron is quoted. This is the usual basis. Other forms of sliding contracts are also made.

Finished Material.—The market for steel bars is good and some large lots have been sold during the past week at 1.20c, Pittsburgh basis, which price remains firm. Structurals are not so active, but 1.25c, Pittsburgh, is holding strong, with no tendency to weaken. The local sheet market is strong, and a good volume of business is being booked by the local mill, with prices as follows, Pittsburgh basis: Black sheets, No. 28, 1.95c, and galvanized No. 28, 3c. In the machine tool market, lathes are selling better than any other product, and a good number of planers were contracted for during the past week. Milling machines are also selling well, and the general outlook for the machinery trade here is better than it has been for some time. Bids for the general contract on the Gibson House, this city, were opened May 27, and the estimates received were as follows: Wells Bros. Construction Co., Chicago, $880,000; Roche-Bruner Building Co., Cincinnati, $882,932; B. M. Hennessey Construction Co., St. Louis, $905,540; James Stewart Co., Pittsburgh, $915,750; Seldon-Bruck Construction Co., $917,288, and Andrew Dall & Son, Cleveland, $1,052,000. It has not been decided as yet which company will receive the contract, but it probably will be one of the first two mentioned. Bids for the construction of the new plant of the Crane-Hawley Co., also of this city, will be received until some time next month. For mill prices see Pittsburgh report.

Warehouse business continues good and prices are holding firm. The contract for about 400 tons of pipe, to be used in the new Union Central Life Insurance building, this city, now under course of construction, will probably be let the latter part of this week. We quote warehouse prices, f. o. b. Cincinnati, as follows:

Steel bars, 1.65c base; iron bars, 1.60c base; structurals, 1.75c base; plates, ¼ inch and over, 1.75c base; sheets, blue annealed No. 10, 1.95c base; rivets, cone head, 2.30c base; cold rolled shafting, 60 per cent discount; boiler tubes as follows: 1¾ to 2¼ inch, 60 per cent discount; 2½ inch, 62 per cent discount; 2¾ to 3¼ inch, 65 per cent discount; 3½ to 4½ inch, 67 per cent discount; and 5 to 6 inch, 60 per cent discount; soft steel cold twisted concrete bars, 60 per cent discount; soft steel cold twisted concrete bars, cut to length as follows: ¾ inch square and larger, 1.75c; ⅝ inch square and larger, 1.85c; ½ inch square and larger, 1.95c; 5-16 to ⅜ inch square and larger, 2.15c; ¼ inch square and larger, 2.25c.

Old Material.—Railroad offerings of scrap iron are better here than for some time. The market is practically unchanged from that of a week ago, which is partly due to the fact that buyers do not as a rule care to pay the prices asked by dealers, and these latter have not shown any tendency to weaken. Prices, however, appear to fluctuate a great deal, and it is hard to quote a fixed price on certain articles. A sale of bundled sheet scrap recently was made at $9, and heavy melting scrap, which is selling in fair lots, is bringing on the average about $10.50 per gross ton. Foundrymen are not buying as well as could be expected considering their capacity of melting. We quote below prices per gross and net tons dealers will pay in Cincinnati and vicinity, as follows:

Gross Tons.

Old iron rails	$12.75 to 13.25
Old steel rerolling	11.50 to 12.00
Old iron axles	19.50 to 20.00
Heavy melting scrap	10.75 to 11.25
Car wheels	11.00 to 11.50
Bundled sheet scrap	9.00 to 9.50

Net Tons.

Old No. 1 R. R. wrought	$10.50 to 11.25
No. 1 machinery cast	10.25 to 11.00
No. 1 busheling	8.50 to 9.00
Stove plate	7.50 to 8.25
Machine shop turnings	7.00 to 7.50
Cast borings	7.00 to 7.50
Heavy turnings	6.50 to 7.50
Mixed cast	8.25 to 9.25

BUFFALO

Pig Iron Strong---Price Advances Expected

Office of THE IRON TRADE REVIEW, Buffalo, May 28.

Pig Iron.—The situation still continues very strong. In fact, while there is no great excitement such as goes hand in hand with an active buying market, the steadiness with which orders are being booked by the blast furnaces, with apparently no great interest on the part of consumers, makes the present buying period quite remarkable. It is likely that furnace schedules will soon be advanced, for there is not a large tonnage still needed to make the order books of the furnaces filled for the remainder of the year. The inquiry for the week amounted to about 15,000 tons and the sales also showed an increase over the previous week, totaling about 20,000 tons in foundry grades, malleable and basic. The price schedule remains about the same, f. o. b. furnaces, although several large interests say $14 is their minimum on foundry grades. The range is:

No. 1X foundry	$14.00 to 14.50
No. 2X foundry	13.75 to 14.25
No. 2 plain	13.50 to 14.00
No. 3 foundry	13.50 to 13.75
Gray forge	13.25 to 13.75
Malleable	14.25 to 14.50
Basic	14.25 to 14.50
Charcoal	15.50 to 16.00

Finished Material.—The indications are that the present range of prices on structural, shapes, bars and plates will not hold beyond July 1, as an advance is apparently in sight.

In structural the Hewitt Rubber Co., Buffalo, will require about 200 tons for a factory addition. C. F. Ernst's Sons were low bidders on the steel for the remodeling of the Washington market by the city of Buffalo, requiring about 100 tons. The Great Lakes Dock & Dredging Co., of Chicago, was awarded the government contract at $126,871 for the new Ferry street bridge, Buffalo, across the Black Rock harbor. The Sisters of Mercy hospital, Buffalo, is to build an 87 x 87 three-story addition requiring about 75 tons.

Old Material.—There has been neither change in prices nor conditions in this market in the past week. What little movement reported has been with outside users, the Buffalo consumers continuing to be out of the buying, owing to the way they are stocked. The range of prices, f. o. b. Buffalo on gross tons, is substantially as follows:

Heavy melting steel	$12.75 to 13.25
No. 1 railroad wrought scrap	14.00 to 14.75
No. 1 R. R. and mch. cast scrap	13.50 to 14.00
Old steel axles	16.50 to 17.25
Iron axles	21.00 to 22.00
Car wheels	12.50 to 13.00
Railroad malleable, scrap	11.50 to 12.25
Wrought iron and soft steel turn.	8.00 to 8.50
Cast iron borings	7.00 to 7.50
Low phosphorus steel scrap	15.75 to 16.00
Old iron rail	15.00 to 15.50
Tank iron	10.00 to 10.25
Boiler plate, sheared	13.75 to 14.25
Pipe and tank	9.50 to 10.00
Stove plate	9.75 to 10.00
Sheet iron	7.00 to 7.50
Locomotive grate bars	11.00 to 11.25

CLEVELAND

Standard Oil Co. Orders Four Boats

Office of THE IRON TRADE REVIEW,
Penton Bldg., May 28.

Iron Ore. — Shipments have been heavy during the past week and the ore unloading plants have demonstrated their ability to take care of the boats promptly, so that dispatch has been good.

On base ores with the guarantee of 55 per cent on old range and Mesabi Bessemer, and 51½ per cent on old range and Mesabi non-Bessemer, we quote as follows: Old range Bessemer, $3.75; Mesabi Bessemer, $3.50; old range non-Bessemer, $3.05; Mesabi non-Bessemer, $2.85.

Pig Iron.—A goodly number of orders ranging from carload lots to 1,500 tons have been taken within a few days. Prices are firmer and have been advanced to a basis of $13.50, delivered Cleveland, for No. 2 foundry. At Toledo furnace, the usual quotation for No. 2 foundry is $13.75. No decided change in price is expected in the near future, but it seems certain that quotations will not be lower for last half. We quote, delivered in Cleveland, as follows, for last half:

No. 1 foundry	$14.00
No. 2 foundry	13.50
No. 2 southern	15.35
Gray forge	13.00
Bessemer	15.15
Lake Superior charcoal	15.75
Jackson co. 8 per cent silvery	16.00

Coke.—Foundries are still well supplied with coke, collected when there was fear of a strike in the coal mines. There is very little new business in foundry grades. Furnace grades are firm and tending upward. We quote:

Connellsville furnace coke, $2.25 to $2.35 for prompt delivery, and $2.40 to $2.50 on contract; Connellsville foundry coke, $2.60 to $2.75 for prompt, and $2.75 to $3.00 on contract.

Finished Material.—While there is very little new business, specifications continue heavy and mills are having difficulty in delivering material as rapidly as consumers desire. Structural shops are busy on many jobs of small tonnage. The city of Toledo will receive bids on June 1, for a swing bridge which will require from 600 to 700 tons of shapes. A part of the material on the old Cherry street bridge will be used in the new structure. The American Ship Building Co. has closed a contract with the Standard Oil Co. for two oil steamers and two barges, which will require about 7,000 tons of shapes and plates. The plain material will be furnished by the Carnegie Steel Co. The American Ship Building Co. has received orders for 14 vessels from the Standard Oil Co. in less than two years. On account of the rapid decrease in the available supply of crude oil in this country, these vessels are being built to transport oil from foreign lands. The Nickel Plate bridge at Buffalo, requiring 1,400 tons, will be erected by the King Bridge Co. The recent advance of $2 per ton in the quotation for boiler tubes makes the base price on 3½-inch by 4½-inch 74 off list price, compared with the nominal quotation of 75, which has been published for a long time, and the actual quotation of 77½, at which contracts for large tonnages were made. The new quotation is subject to the additional discounts of 5 and 5 off, as the old one was.

Old Material.—Demand for melting steel and rolling mill grades is good and a very fair volume of material is moving. Dealers are receiving quantities of scrap of various grades from outside the city, and at the same time are shipping steadily on contracts. Still, so optimistic are dealers that they are not anxious to sell forward in quantity. Local rolling mills are in the market for busheling at $11 at which sales have been made this week. Heavy melting steel is also in more active demand, some tonnage being sold at $12.75, the buyer wanting more. Dealers are not anxious to sell, however, holding for eventual higher prices. We quote, gross tons, f. o. b. Cleveland, as follows:

Gross Tons.

Old iron rails	$15.00 to 15.50
Old steel rails (under 6 ft.)	13.00 to 13.50
Old steel rails (over 6 ft.)	13.25 to 13.75
Relaying rails	19.50 to 20.00
Old car wheels	13.00 to 13.50
Old steel boiler plate	13.00 to 10.50
Malleable iron (railroad)	12.50 to 13.00
Steel axles	17.00 to 17.50
Axle turnings	10.00 to 10.50
Malleable iron (agricultural)	10.00 to 10.50
Heavy steel	12.25 to 12.75
Country mixed steel	10.75 to 11.25
Bundled sheet scrap	10.00 to 10.50

Net Tons.

No. 1 R. R. wrought	$12.00 to 12.50
No. 1 busheling	11.00 to 11.50
No. 1 machine cast	11.00 to 11.50
No. 1 dealers' wrought	10.00 to 10.50
Machine shop turnings	7.75 to 8.00
Pipes and flues	9.50 to 10.00
Wrought drillings	7.75 to 8.00
Stove plate	9.50 to 10.00
Cast borings	7.75 to 8.00
Wrought iron piling plate	14.50 to 15.00
Wrought iron arch bars	14.00 to 14.50

BIRMINGHAM

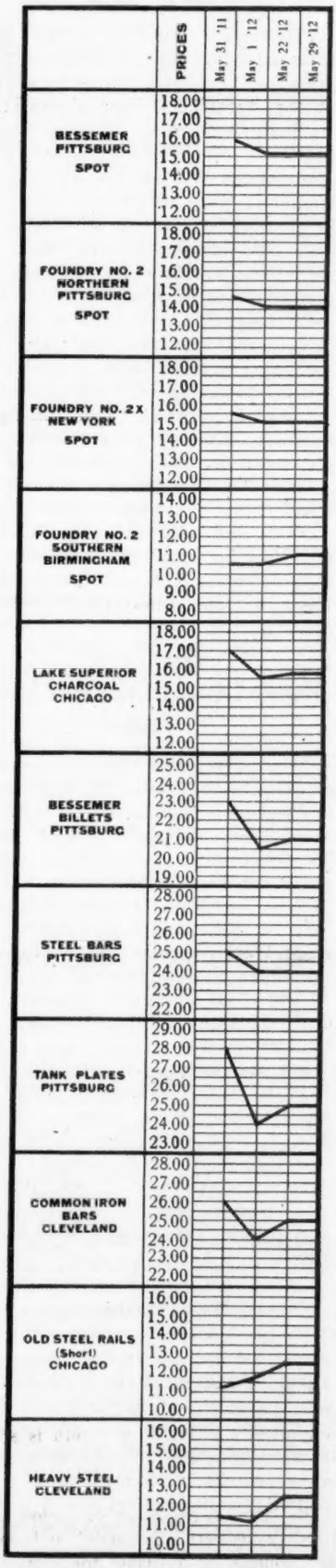
Decided Scarcity of Lower Grades

Office of THE IRON TRADE REVIEW,
Birmingham, Ala., May 28.

Pig Iron.—In the past week, report was made of the sale of 1,500 tons of No. 2 soft, for delivery in the last quarter, at $11.50 per ton at Birmingham; 500 tons of the same grade for spot shipment brought $11.50 per ton at Birmingham, and 1,000 tons of especial analysis iron, for shipment through the third quarter sold at the same price. The aggregate of sales made in the week is estimated at 12,500 to 15,000 tons, the bulk of which was in lots of less than 500 tons each, and sold at $11 to $11.50 per ton at Birmingham, depending on the delivery required. A small lot of No. 3 foundry for immediate shipment was sold at $11 per ton at Birmingham, and one or more small lots of No. 2 soft, for shipment within the next 30 to 60 days, sold at $11.25 per ton at Birmingham. The business transacted in the week was well distributed over the trade, but represented actual requirements in the majority of cases. A certain portion of the week's engagements was due to the inability of the furnace companies to make delivery against previous contracts. This last condition, however, is accounted for by the grades specified, as the aggregate movement so far in this month is short of the movement to this date in the month previous.

The scarcity of all grades below No. 3 foundry is very pronounced, and where such tonnage is available for spot ship-

PRICE CHART



ment, there is a tendency to ask premium prices. In those cases where the furnace interest is well sold on all grades for advanced delivery, a differential of 25 cents per ton only is made in quotations on the grades referred to, but some tonnage is still to be had at the usual differential of 50 cents per ton from the No. 2 foundry price—this last being $11 to $11.50 at Birmingham in all cases.

The inquiry now pending aggregates some 7,500 to 10,000 tons, all of which is in definite form. In the majority of cases, the prospective customers are disposed to await further developments before entering additional contracts, except where requirements are urgent, or the tonnage to be purchased is necessary to fill orders actually in hand for the several manufactured products. At the same time, the producing interests are apparently content with conditions existing, despite reports of weakness in the northern markets. The market is quoted firmly as below for deliveries prior to the last quarter, with an advance of 50 cents per ton over those figures quotable for strictly last quarter shipments, except for charcoal iron, which can be had during the remainder of the year at the figures shown:

For delivery prior to last quarter:

No. 1 foundry	$11.50 to 11.75
No. 2 foundry	11.00 to 11.25
No. 3 foundry	10.50 to 10.75
No. 4 foundry	10.00 to 10.50
Gray forge	9.75 to 10.25
Mottled	9.50 to 10.00
Standard basic	10.75 to 11.25
Off basic	10.50 to 10.75
Standard charcoal	22.50 to 23.00

With the exception of charcoal iron, an advance of 25c to 50c per ton would be asked over the above figures for deliveries in the last quarter.

Cast Iron Pipe.—The small orders entered at local plants during the past week aggregate 2,500 to 3,000 tons, all of which is for comparatively early shipment. Reports from all quarters of the territory indicate a very liberal tonnage now under consideration, which will no doubt be up for letting as soon as the necessary financial arrangements can be made. At this time, one or more large municipal requirements are being held in abeyance, while considerable tonnage of class A pipe is soon to be required for railroad construction in the south. Prices are firm, and are quotable as follows, for water pipe, per net ton, f. o. b. cars here, viz.: 4 to 6-inch, $23; 8 to 12-inch, $22; over 12-inch, average $21, with $1 per ton extra for gas pipe.

Old Material.—A revision of local dealers' asking is considered warranted by the conditions existing, although the tonnage that recently changed hands is comparatively small. Light cast and machinery grades continue in fair demand, and considerable inquiry is being received from the north and east for wrought and steel grades. The consumption of the grades referred to at local mills is practically normal. Dealers' asking prices are as follows, per gross ton, f. o. b. cars here, actual selling prices depending very largely upon the several conditions existing at the time of inquiry:

Old iron axles (light)	$15.50 to 16.00
Old steel axles (light)	12.00 to 12.50
Old iron rails	12.00 to 12.50
No. 1 R. R. wrought	12.00 to 12.50
No. 2 R. R. wrought	10.50 to 11.00
No. 1 country	8.50 to 9.00
No. 2 country	6.50 to 7.00
No. 1 machinery	9.00 to 9.50
No. 1 steel	9.50 to 10.00
Tram car wheels	8.50 to 9.00
Standard car wheels	10.50 to 11.00
Light cast and stove plates	7.00 to 7.50

METAL MARKETS

Chicago

May 27.

New Metals.—Copper buying has continued heavy and prices are appreciably higher, especially on lake copper. Quotations on lead are unchanged and spelter has also been stationary throughout the week. There has been no reaction from the high prices of tin and consumers are buying at the present market level only to take care of their immediate requirements.

We quote, dealers' selling prices, f. o. b. Chicago, as follows:

Lake copper, carload lots, 16½c; casting, 16⅜c; smaller lots, ¼c to ¾c higher. Spelter, car lots, 6.75c; lead, desilverized, 4.15c in 50-ton lots; corroding, 25c per 100 pounds higher; sheet zinc, 8.65c, f. o. b. La Salle, in car lots of 600-pound casks; pig tin, 47c; Cookson's antimony, 8½c; other grades, 7½c to 8c.

Old Metals.—The demand for copper and brass, as well as for zinc, continues strong and prices are firm largely on account of advancing quotations in the primary metal market. There is some buying for future delivery but most of the foundries in this district still seem to be content with hand-to-mouth purchases.

We quote, dealers' selling prices, f. o. b. Chicago, as follows:

Copper wire, crucible shapes, 14¾c; copper bottoms, 13¼c; heavy cut crucible copper, 14¾c; heavy red brass, 12½c; heavy yellow brass, 10c; No. 1 red brass borings, 11c; No. 1 yellow brass borings, 9c; brass clippings, 9¼c; lead pipe, 3½c; zinc scrap, 5⅛c; tea lead, 4c; No. 1 aluminum, 12½c; No. 1 pewter, 28c; block tin pipe, 41c; tin foil, 35c; linotype dross, 3¼c; electrotype dross, 3c; stereotype plates, 4½c; stereotype dross, 3¼c; prime slab zinc dross, $90 a ton.

The annual meeting of the Dominion Steel Corporation will be held about the second week of June.

COKE COMPLAINT MADE

James A. Campbell Claims Rates Are Discriminatory.

Hearing of the complaint against the rates on coke from the Connellsville regions to iron and steel plants in the Mahoning and Shenango valleys was heard Monday before Special Examiner Gerry, of the Interstate Commerce Commission.

The defendants are the Pittsburgh & Lake Erie Co., with the Pennsylvania railroad, the Pennsylvania Co., and the Baltimore & Ohio railroad, and the complainants are the Youngstown Sheet & Tube Co., the Republic Iron & Steel Co., the De Forest Sheet & Tin Plate Co., the Sharon Steel Hoop Co., the Valley Mold & Iron Co., the Sharpsville Furnace Co., the Girard Iron Co., the Brier Hill Iron & Coal Co., the Youngstown Steel Co., the Struthers Furnace Co., the Ohio Iron & Steel Co., the Andrews & Hitchcock Iron Co., the Empire Iron & Steel Co., the Thomas Steel Co., the Shenango Furnace Co., the Youngstown Iron & Steel Co., and the Stewart Iron Co.

James A. Campbell, president of the Youngstown Sheet & Tube Co., was the only witness who was on the stand. He declared that the rate of $1.35 a ton on coke from the Connellsville regions to the Youngstown district is discriminatory and unlawful and should be no higher than the rate of 85 cents a ton on coal between these districts. These rates, he said, were "unduly and unjustly discriminatory when compared with rates on coke between other points throughout the United States."

He stated that 6,000,000 tons of coke are consumed annually in the valley district, of which 3,500,000 tons are consumed by the complainants; that the rates are too high for the cost of the railroad service performed; that the valley consumers are at a disadvantage when compared with other producing centers.

He declared that unless they secured relief from the rate now charged it would be necessary to construct a ship canal (now projected) from the lakes through the valleys in which their plants are located, or for the complainants to construct their own railroad from Connellsville to the Youngstown district.

On cross examination, witness stated that his company now has a surplus of $8,000,000; that it pays a dividend of 8 per cent on $10,000,000 common stock and 7 per cent on $3,500,000 preferred stock.

The hearing was then put over until yesterday and resumption was had of the case of the Connellsville Coke Producers Association against the Pittsburgh & Lake Erie, Pennsylvania and Baltimore & Ohio, questioning the reasonableness of rates on coke from Connellsville to Toledo, Cleveland and other consuming points. This is a resumption of the case for the purpose of cross examining witnesses and securing expert testimony.

WILL BLOW IN

Two More Blast Furnaces at Steelton, Pa.

Steelton, Pa., May 28. — Two more blast furnaces at the plant of the Pennsylvania Steel Co. will be put into operation within the next 30 days, and preparations are now under way. No. 3 stack, which went out in June, 1911, will be started about the middle of next month and No. 1 stack, which was banked on Dec. 21, 1910, will be blown in about two weeks after No. 3 is started. During the past five years this will make only the second time that the four furnaces at the local plant have been in operation at one time.

The steel works are now employed to over 85 per cent of their capacity and the output so far for May is greatly in excess for the entire month of May last year. Two thousand seven hundred tons of plate girders for the national government will be turned out in the near future, this to be used for the Panama canal. Beside this the company will roll 500 tons of girder rails and 4,200 tons of standard rails for the Harriman railways. The ore receipts are normal. In addition to the receipts of Cuban ore some lake ore was received during the past week.

Lets Big Contracts

The Brier Hill Steel Co., Youngstown, O., has let a contract for a hot metal mixer and eight hot metal ladle cars for its proposed open-hearth steel plant, to the William B. Pollock Co. The mixer will be of 600-ton capacity and twice the size of the mixers used in ordinary practice. The only one of similar size is in use in Birmingham, Ala. It will be operated by electricity. The hot metal ladle cars will be of 45 tons capacity.

The contract for the 100,000 yards of grading has been let to Lathrop, Shea & Henwood, contractors, of Buffalo. The work will require several months. The contract for 12 boilers has been given to the Erie City Iron Works. The boilers will be of the vertical type and capable of developing 500 horsepower each.

SCHWAB SAYS

He Will Double Capacity of Bethlehem Plant in Three Years.

Philadelphia, May 27.—The delegates attending the International Congress of Navigation visited the plant of the Bethlehem Steel Corporation, at South Bethlehem, Pa., on Friday, May 25. They were taken from Philadelphia to Bethlehem in a special train and were received at the plant by Charles M. Schwab personally. A thorough inspection was made of the works by the delegates, who expressed themselves as delighted with everything they saw. Every portion of the great plant was explored. The visiting engineers were surprised at the completeness with which machinery has been made to do the work formerly done by human labor. At the luncheon which followed the inspection of the plant, Mr. Schwab stated that earnings were being steadily put back into the business and that he expected to double the capacity of the plant in three years. He added that about 16,000 men are now on the payroll.

Pacific District Officers of Metal Trades

The United Metal Trades Association of the Pacific Coast, with headquarters at Portland, Oregon, announces the election of the following district officers for the ensuing year:

For the Washington district, with offices at 333 Lyon building, Seattle, E. Johnson, manager of the Seattle Machine Works, chairman; J. V. Paterson, president of the Seattle Construction & Dry Dock Co., vice chairman, and J. J. Hendricks, of the Hendricks Mfg. Co., treasurer.

For the Oregon district, with headquarters at 222 Commercial Club building, Portland, A. J. Labbe, Willamette Iron & Steel Works, was elected chairman; H. E. Harris, manager of the Harris Ice Machine Works, Portland, vice chairman, and H. T. Clarke, manager of the Portland Iron Works, treasurer.

Others Made Purchase.—The Brier Hill Steel Co., Youngstown, O., advises that the report that it has purchased the Sykes Metal Lath & Roofing Co. plant, at Niles, O., is incorrect. The purchase was made by Ira A. Thomas and C. R. Thomas.

The Maryland Steel Co. will build a two-story brick storage warehouse on its grounds at Sparrows Point, Md. The cost is estimated at $20,000.

OIL FIRED CONVERTER

Will be Used by Steel Castings Syndicate at Hamilton, Ont.

Toronto, May 27.—The Steel Castings Syndicate, composed of Buffalo, Hamilton and Toronto capitalists, of which C. W. Sherman of Buffalo, is manager, will erect a plant at Hamilton, on which $300,000 will be spent this year as a commencement, a site of 11 acres having been secured. The syndicate has the exclusive right for Ontario for the Stock patent oil-fired converter. The process enables the raw material to be charged directly into the converter, melted down with an oil flame, and refined by blowing. It has been adopted for light work by 18 British firms. In addition, the plant will be equipped with a 20-ton open-hearth furnace for the manufacture of heavy steel castings. Tenders will be asked for immediately, and it is hoped to begin manufacturing before the end of September. The main building will be one story, 520 by 160 feet. The cleaning building will be 400 x 60 feet. The pattern shop, one story, 120 x 60 feet; pattern storage building, two stories, 100 x 80 feet; office building, two stories with basement, 60 x 30 feet; and oil-house 50 x 50 feet containing three 12,000-gallon tanks for the storage of crude oil. Paralleling the main building will be an outside crane runway, under which all raw materials will be unloaded and stored. All the buildings will be of absolute fireproof and modern construction, and the equipment of the latest type. The plans are being prepared by Prack & Perrine, of Hamilton, who will have charge of the construction and the installation of equipment.

The Canadian Railway Commission has issued orders approving the plans of the Grand Trunk Railway for the construction of a new down-town Union station, at Toronto, at a cost of $2,500,000, and for the erection of a viaduct and the elevation of the tracks along the waterfront of the city at a cost of $6,500,000, the work to be proceeded with as soon as possible. The joint grade separation plan of the Canadian Pacific and Canadian Northern Railway for the northern part of the city was also approved, which will involve the construction of a Union station in North Toronto, to cost $2,000,000, and the expenditure of another $2,000,000 in viaducts and railway improvements.

The final dividend of the Southern Steel Co., consisting of several thousand dollars, was declared recently at Birmingham, Ala. The concern was placed in bankruptcy in 1907. Creditors have selected W. H. Moore as trustee to succeed the late John E. Morris. The plants of the company, which was succeeded by the Southern Steel & Iron Co., have been operated by the latter since they were taken over.

NEEDED REPAIRS

Being Made by Reading Iron Co., Although Works are Busy.

Reading, Pa., May 28.—The Reading Iron Co.'s Scott foundry department has secured a contract from the Webb Press Co., of Minden, La., for building three cotton presses. Work has been begun on these presses.

The heaters, spannermen, rollers and trimmers of the sheet mill of the company have been compelled to quit work until needed repairs are made to the establishment. The plant has been very busy for some time.

The company has started to make many alterations, which are expected to be finished in a short time when the 60 men now out of work can resume. Seven puddling furnaces, where 70 men are employed, are in operation.

Pig Iron Made By Electricity

The plant of the Noble Electric Steel Co., Heroult, Cal., has been in continuous operation for more than 30 days, and is turning out from 10 to 12 tons of pig iron daily. The first car load of pig iron ever shipped out of California was recently sent to a foundry in Salt Lake City. An additional furnace is being installed at the steel company's plant.

Lights Fourth Furnace

Pittsburgh, May 29. (By wire.)—The Jones & Laughlin Steel Co. has blown in the fourth Talbot open-hearth furnace at the Aliquippa, Pa., works, and for the first time all furnaces there are now operating. The company has nine of ten blast furnace stacks in blast and is considering the date for blowing in the tenth shortly.

Will Make Black Plate

Pittsburgh, May 29. (By wire.)—The Youngstown Sheet & Tube Co. is planning to install one tin mill but no finishing plant. It proposes making small sizes of black plate only.

The Earle Gear & Machine Co., Philadelphia, has increased its capital stock from $40,000 to $130,000.

TRIP TO GARY

Enjoyed by Three Hundred Chicago Foundrymen.

About 300 foundrymen from Chicago and vicinity embarked on the steamer City of Chicago, Saturday, May 25, at 11 a. m., for an outing on Lake Michigan and an inspection of the plant of the Indiana Steel Co., at Gary. The excursion was under the auspices of the Chicago Foundrymen's Club. The steamer docked at the steel works at 1:30 p. m., and the party was escorted through the mills on a special train. After returning to the city in the evening, a banquet was served at the Auditorium hotel.

Perfect weather added to the enjoyment of the day. En route to Gary a table d'hote luncheon was served on the boat. All parts of the steel plant were visited, including the ore yards, docks, coke ovens, blast furnaces, open-hearth department, etc. The train also made a circuit of the shipping and classification yard at the west end of the property, affording the visitors a glimpse of the new mills of the American Sheet & Tin Plate Co.

The steamer left Gary for Chicago at 4:10 p. m., and cruised on the lake until 7 o'clock. A buffet luncheon was served while returning and the Lewis Institute Glee Club furnished a musical entertainment.

Following the trip to Gary, the annual reunion banquet of the Chicago Foundrymen's Club was held at the Auditorium hotel, about 200 being present. Places were reserved at the speakers' table for a number of distinguished guests who had accompanied the party on the trip to Gary in the afternoon. These included Major Joseph T. Speer, president of the American Foundrymen's Association; Dr. Richard Moldenke; R. A. Bull, of St. Louis; W. B. Miles and Frank W. Tracy, of Buffalo; Arthur E. Waterfall, of Detroit; W. M. Corse, secretary of the American Institute of Metals; Thomas D. West and W. A. Jones, ex-presidents of the American Foundrymen's Association.

The program for the evening was opened by President Wood, of the Chicago Foundrymen's Association, who spoke briefly on the purposes of the local foundrymen in forming their organization and also on the achievements and aims of the club. H. O. Lange, of the Ferguson & Lange Foundry Co., Chicago, was toastmaster. Brief remarks were made by the various out-of-town guests.

Mechanical Engineers Meeting in Cleveland

Great Growth of the Society—Professional Papers Read—Numerous Manufacturing Plants Visited

Twenty-nine years have elapsed since the members of the American Society of Mechanical Engineers gathered in Cleveland for their spring meeting. The professional sessions were held in the City Hall, June 12 to June 14, 1883, and the records showed an attendance of 77. The second spring meeting of this society held in the Forest City was opened this week by two informal receptions, one in the afternoon at the home of Mr. and Mrs. Ambrose Swasey, and the other in the evening at the Chamber of Commerce Hall. Since its formation in 1880, this organization has enjoyed a remarkable growth, the total membership in January, 1912, having numbered 4,115. This enrollment also is in striking contrast to the attendance at the Cleveland meeting in 1883. As is customary at spring meetings, this gathering will be devoted largely to visits to manufacturing plants in Cleveland and surrounding towns. Only four professional sessions will be held, Wednesday, Thursday and Friday mornings, which include a simultaneous meeting of the Gas Power Section on Wednesday morning.

At the close of the business meeting Wednesday morning, the first professional session was called to order. The papers presented follow: "A New Analysis of the Cylinder Performance of Reciprocating Engines", by J. Paul Clayton; "Equipment of a Modern Flour Mill on a Gradual Reduction System", by John F. Harrison and W. W. Nichols, and "Design and Mechanical Features of the California Gold Dredges", by Robert E. Cranston.

A simultaneous session of the Gas Power Section was held, at which the following papers were presented and discussed: "Problems in Natural Gas Engineering", by Thos. R. Weymouth; "Some Tests on Carburetors", by Geo. W. Monroe, and "Bituminous Coal Producers for Power", by C. M. Serland.

Visits to Manufacturing Plants

In the afternoon, the following manufacturing and power plants were visited: The Pennsylvania Co.'s ore-handling plant, Peerless Motor Car Co., Warner & Swasey Co., Brown Hoisting Machinery Co., Winton Motor Car Co., White Co., National Acme Mfg. Co. and the American Steel & Wire Co. In the evening, an illustrated lecture was delivered by Dr. C. Miller, of the Case School of Applied Science on "Sound Waves—How to Photograph Them and What They Mean". This lecture was illustrated with apparatus and experiments and a new instrument was shown, termed the "Phonodeik", which was used for projecting sound waves directly upon a screen.

During the morning, the ladies inspected one of the local cloak manufacturing plants and in the afternoon they enjoyed an automobile trip through the parks, tea having been served at the Country Club. A lake ride is outlined for Thursday afternoon and in the evening a reception will be held at the Colonial Club. The meeting will close on Friday afternoon after an inspection of the plants of the Goodrich Rubber Co. and the Wellman-Seaver-Morgan Co., at Akron, O.

The "Cleveland Book"

The "Cleveland Book", which contains 123 pages and was compiled and issued by the local committee in charge of the sixty-fifth meeting of the Society, in addition to the program, contains a brief outline of the purpose of the American Society of Mechanical Engineers, a report of the first Cleveland meeting in 1883, as well as biographical sketches of the society's presidents active in Cleveland. These include E. D. Leavitt, A. C. Humphreys, J. F. Holloway, Worcester R. Warner, Samuel T. Wellman and Ambrose Swasey. The book concludes with discussions of civic and manufacturing enterprises of the city of Cleveland, which are of the most consequence to mechanical engineers. These include gas power development in Cleveland, the natural gas supply of the city, natural gas power installations, the gasoline automobile industry, a brief discussion of the Cleveland Furnace Co.'s Semet-Solvay by-product coke plant, hoisting and conveying docks, etc. The work is well-arranged, handsomely bound in cloth, and reflects great credit upon its compilers.

The chairmen of the various committees in charge of the Cleveland gathering follow: Local committee, Ambrose Swasey; executive and entertainment committees, R. H. Fernald; finance committee, R. H. Sheridan; publicity, E. P. Roberts; transportation, Geo. E. Merryweather and accommodations, Arthur G. McKee.

Former Congressman James Kennedy is assisting Richard Jones Jr., general counsel for the Republic Iron & Steel Co., in compiling data which are to be submitted to the Interstate Commerce Commission in the petition of Pittsburgh and Mahoning valley manufacturers who are seeking lower freight rates.

ASK PROTECTION

Of Ore Mines by Government Against Cuban Rebels.

Private cable advices received by those companies having extensive iron ore interests in Cuba, indicate that the extent of the looting by the insurrectos in some provinces has been exaggerated. In the Santiago district, where the uprising has been the severest, the destruction wrought by the rebels has not been as extensive as reported, the American companies conducting ore operations in Cuba have asked for the protection of their properties by the United States government and are keeping closely in touch with the federal authorities, to bring about such action by the mobilized fleet at Key West, as the situation warrants. The iron ore properties owned by American interests which are likely to undergo damage from a destructive uprising are those of the Spanish-American Iron Co., the Juragua Iron Co., and the Punupo Manganese Co., in the Daiquiri or Santiago district, and that of the Spanish-American Iron Co. in the north coast or Mayari district.

KIRBY RE-ELECTED

Chosen To Head National Association of Manufacturers.

John Kirby, of Dayton, O., was re-elected president of the National Association of Manufacturers at its concluding annual session at New York, May 22. A. B. See, of New York, was chosen to fill the vacancy of treasurer.

The banquet was held at the Waldorf-Astoria, Wednesday evening, and was attended by over 500 manufacturers. David M. Parry acted as toastmaster and the speakers were Congressman J. W. Fordney, of Michigan, Job E. Hedges and Nathaniel Curry, president of the Canadian Manufacturers' Association.

Cambria Steel Co.'s Motor-Driven Merchant Mills

A Notable Installation of Electrically - Operated Steel Rolling Equipment Which Has Proved Unusually Successful

The application of motor drive for the operation of continuous merchant mills has been worked out successfully by the Cambria Steel Co., Johnstown, Pa., in the new plant added to the Gautier department, which was placed in operation more than a year ago. The four mills, respectively, 16, 12, 10 and 8-inch, are all electrically-driven, and the installation, insofar as it applies to the employment of electric motors for driving continuous merchant mills, is the first of its kind made in this country. Operations extending over a period of more than a year have afforded ample opportunity to test thoroughly the practicability of electric drive for small, continuous mills, and the advantages far outweigh the desirable features of steam drive. The cost of attendance upon steam engines almost entirely is eliminated, as the four large motors receive only the occasional attention of the plant electrician. The economies that have been effected are considerable and the feasibility of driving small mills with motors has been proved by the success achieved with this installation. The plant, in design, arrangement and equipment embodies many novel features of rolling mill construction.

When it was decided to extend the capacity of the Gautier department to meet the growing demands for its merchant steel products, obtaining a suitable site for the four mills was the first problem presented. The tract available was restricted in area, but was finally decided upon as the location for the new plant. Considerable engineering skill was displayed in arranging the mills within the confined area chosen, but the problem was solved successfully, as indicated in the plan of the layout shown on the accompanying insert.

Sequence of Rolling Operations

Steel, in the form of 4 x 4-inch billets, and in lengths of 6 and 12 feet, is delivered to this plant from the company's billet mills, at a point convenient for its transfer by crane, onto the skids leading to the charging ends of two large producer gas-fired continuous heating furnaces, each 13 feet, 6 inches x 56 feet, 6 inches. The billets are charged into the furnaces by pushers, and after being heated, are discharged automatically at the opposite end, onto the entering table of the 16-inch continuous mill. After being broken down on this mill, the steel, without further re-heating is delivered to the 12-inch strand mill by the transfer shown in Fig. 9, and after rolling is run out on a Morgan saw-tooth cooling bed. The 16-inch mill also breaks down billets for the 10-inch continuous mill and the bars intended for this mill are delivered by the 16-inch mill runout to a storage rack adjoining a 25 x 30-foot Morgan continuous, producer gas-fired heating furnace. If the product of the 16-inch mill is desired for shipment or for stock, it is delivered to a Cambria type cooling bed, Fig. 11.

The billets for the 10-inch continuous mill, in 30-foot lengths, are heated in the Morgan continuous furnace, and after being broken down in this mill the bars are finished on the 8-inch strand mill and are run out onto a Morgan cooling bed of the herringbone type, shown in Fig. 10. Shipping tracks parallel both sides of the plant and after the material has been cut to length and bundled, it is loaded onto cars on the depressed shipping tracks.

The 16-inch continuous mill consists of six stands of rolls and has a capacity for breaking down 4 x 4-inch billets to billets from 1¼ to 2¼ inches square. The mill is driven by a 1,000-horsepower alternating current motor through three sets of bevel gears on the motor shaft and six spur gears. The motor operates at a speed of 188 revolutions per minute and the speeds of the rolls, from the entry side to the finishing end of the mill are, respectively, as follows: 16.304, 22.959, 36.92, 52.17, 75 and 100 revolutions per minute. Each set of bevel gears drives two stands of rolls through a pinion meshing with the spur gears driving each roll stand. The gearing driving the 16-inch mill is shown

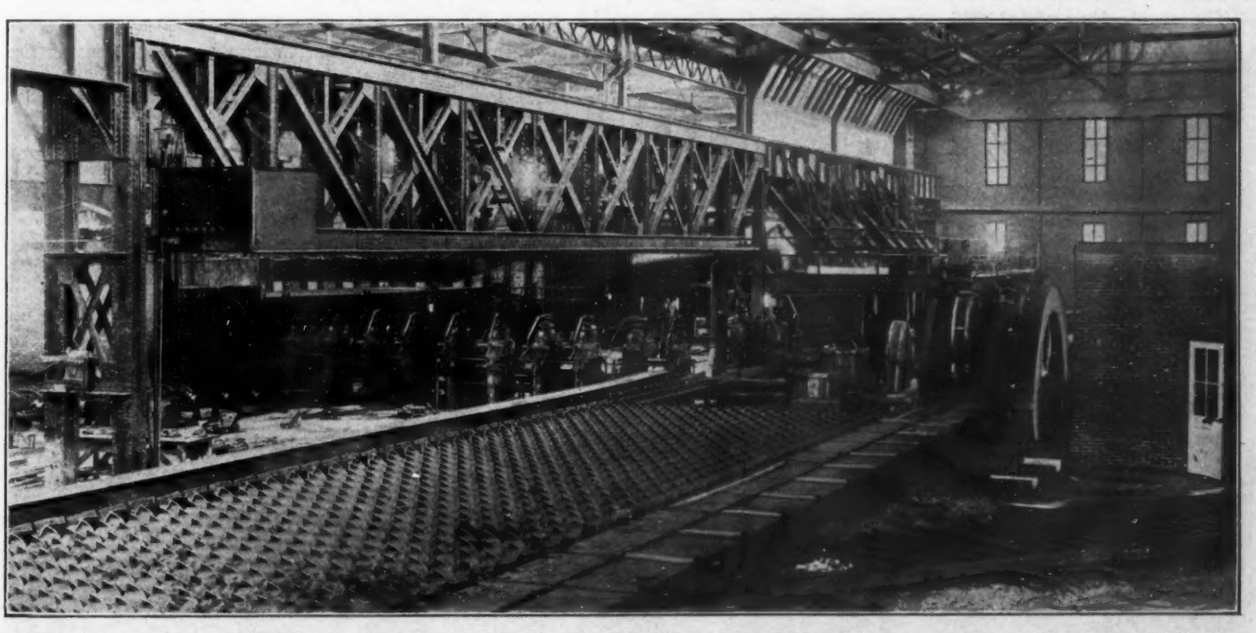


FIG. 1—GENERAL VIEW OF THE 12-INCH STRAND MILL, SHOWING THE COOLING BED, AND THE MOTOR HOUSE AT THE RIGHT

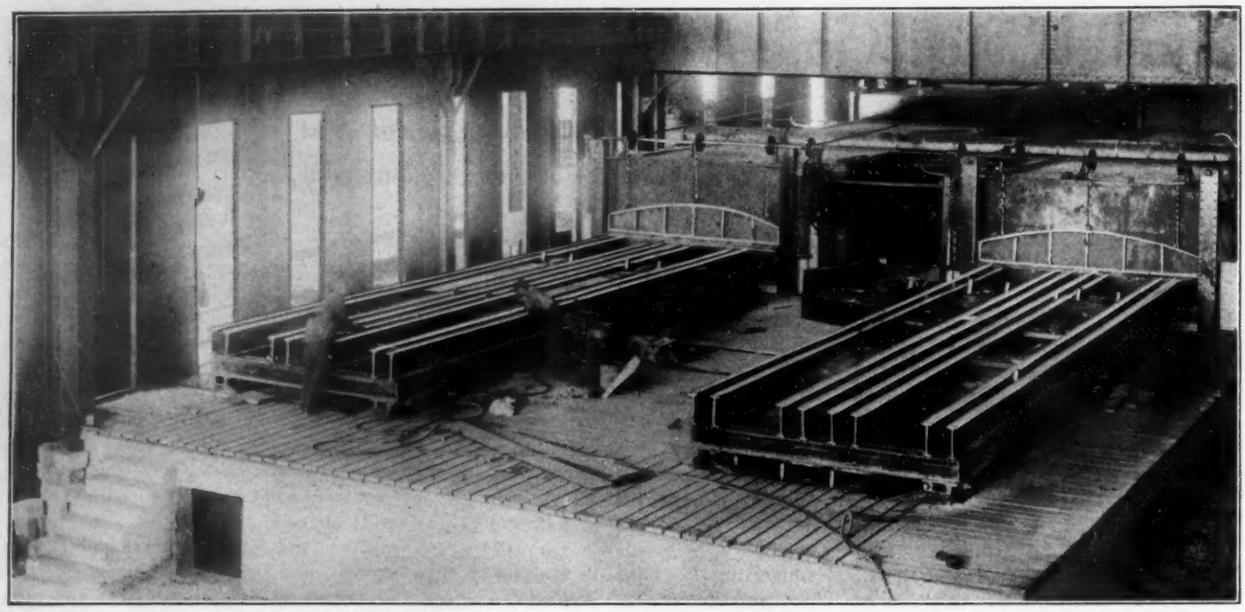


FIG. 2—CHARGING END OF THE BILLET HEATING FURNACES FOR THE 16-INCH MILL

in Fig. 4, and that of the 10-inch continuous mill is similar in design. The pinion housings and the gears of these two continuous mills are entirely enclosed to safeguard the mill operatives from accidents. The construction of the pinion housings is unique as they are cast practically integral, similar to an engine bed. The ends of the pinions are removable and can be replaced easily when worn or broken. The division of supervision over the 16 and 10-inch continuous trains marks a distinct departure in rolling mill practice. The roller has control of only that part of the train beginning at the ends of the pinions next to the rolls, while the gearing and pinions are under the supervision of the master mechanic.

The flywheel on the 1,000-horsepower motor shaft, as well as the other three flywheels were designed by the Cambria Steel Co.'s engineers and were cast by the Mesta Machine Co., Pittsburgh. The rim of the wheel was cast in halves through the circumference, which are bolted together, the arms being bolted to a loose hub. The wheel is 17 feet in diameter and the weights of the various parts follow: Rim, 90,000 pounds; hub, 13,300 pounds; arms, 28,000 pounds and including the bolt heads and nuts, the total weight of the wheel is 132,000 pounds. The rim speed is 10,000 feet per minute; rim effect, 5,063,400 foot-pounds and the radius of gyration of the rim is 7 feet, 6 inches. The wheel is made of cast steel.

All of the motors and controlling apparatus are enclosed in well-ventilated brick houses, Fig. 7, which is a view of the motor house for the 12-inch mill. An interior view of the motor house for the 16-inch mill is shown in Fig. 6, which also illustrates the 1,000-horsepower motor, switchboard and controlling equipment. The motors are of the heavy mill type, alternating current, three-phase, 25-cycle, and were built by the Westinghouse Electric & Mfg. Co., Pittsburgh. Each motor is provided with a long rotor shaft to permit of shifting the stator on the bed and to afford access to the rotor. The motor and flywheel shafts are coupled together by a flexible spring coupling which permits of easy starting and absorbs the shocks transmitted from the mill. All of the motors are solenoid-controlled.

Interposed between the 16-inch mill

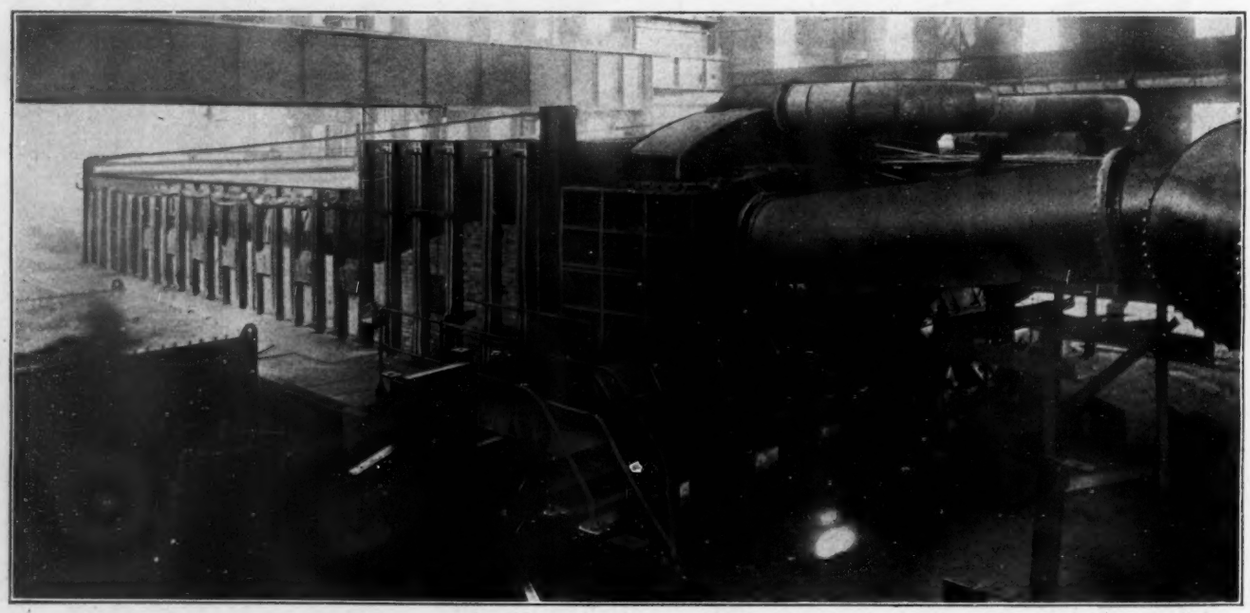


FIG. 3—DRAWING END OF THE 16-INCH MILL BILLET HEATING FURNACES

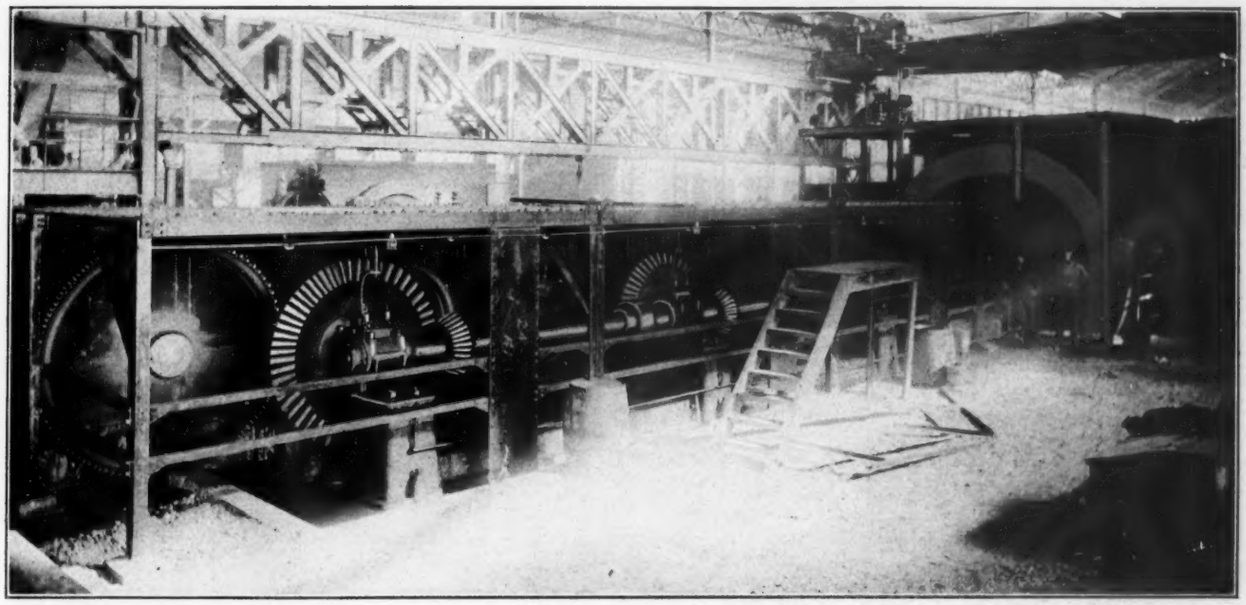


FIG. 4—GEARING DRIVING THE 16-INCH CONTINUOUS MILL

runout and the transfer to the 12-inch strand mill is a Morgan 12-inch steam flying shear for cutting material to length which is not to be finished on the 12-inch mill. The transfer bed at the end of the 16-inch train, shown in Fig. 9, is 65 feet long and delivers the bars to a roller table, operating at a speed of 225 feet per minute, which conveys the bars to the first roughing stand of the 12-inch strand mill. The product of the 12-inch mill consists of squares and rounds, ⅛ to 1¾ inches, and flats, 1½ x ⅜ to 3¾ x 1 inches. The 12-inch train, a general view of which, together with a section of the cooling bed, is shown in Fig. 1, consists of six stands of rolls, five of which are direct-driven from the motor shaft, while the finishing stand is offset and is gear-driven from the motor shaft. The two sets of pinions which engage with the spur gear driving the offset stand are 3-high. The rolls of the 12-inch mill runout operate at a surface speed of 767 feet per minute and are driven by a 25-horsepower Westinghouse motor operating at a speed of 690 revolutions per minute. The bars are delivered to an Edwards saw-tooth cooling bed built by the Morgan Construction Co., Worcester, Mass. This bed is 165 feet long and is shown in Figs. 1 and 8, and at the right of Fig. 11. After the bars have been cooled, they are delivered to the shear table, Fig. 12, where they are cut to length and bundled for shipment in cars on a depressed track paralleling this side of the mill.

The motor driving the mill is of 500-horsepower capacity and operates at a speed of 183 revolutions per minute. The flywheel, Fig. 7, is made of cast steel with the arms bolted to a loose hub. This wheel is 17 feet in diameter; the weight of the rim 60,000 pounds; weight of hub, 7,800 pounds, and the weight of the arms, 18,500 pounds. The rim speed is 10,000 feet per minute; rim effect, 3,375,000 foot-pounds and the radius of gyration of the rim, 7 feet, 6 inches.

Billets rolled on the 16-inch mill not intended for the 10-inch mill, and heavy bars for shipment, are cooled on the Cambria type of hot bed illustrated in Fig. 11. This bed is 65 feet long and the billets and bars are delivered by the roller table at the lower end of the transfer bed which engages with the

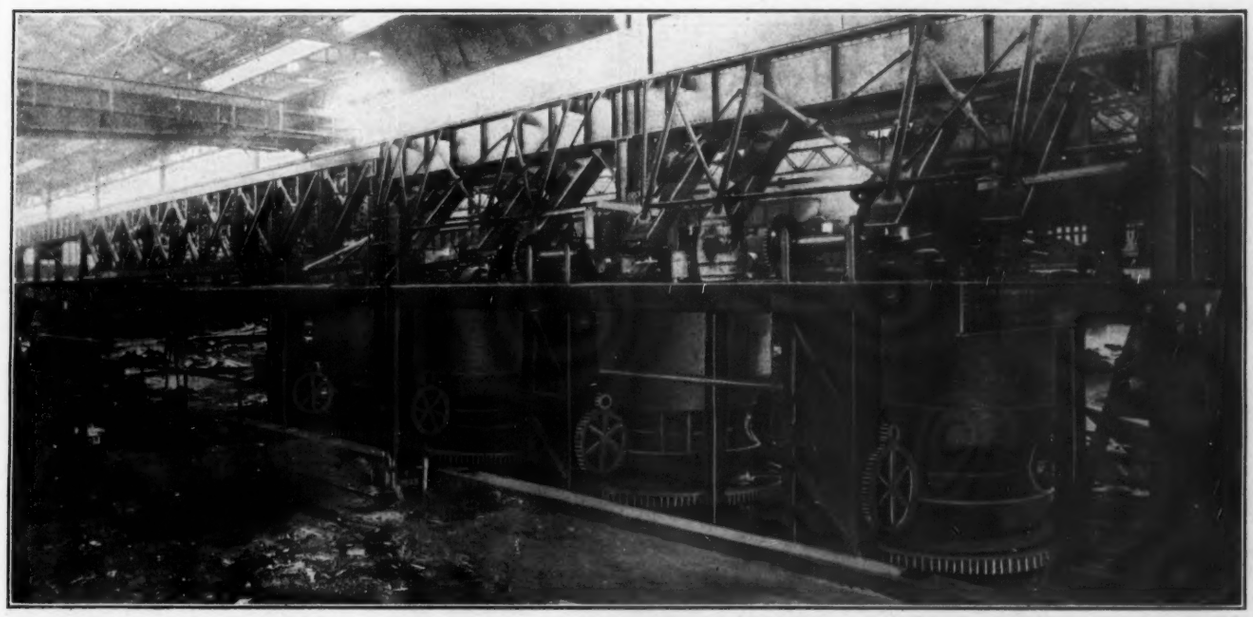


FIG. 5—THE FOUR HUGHES GAS PRODUCERS, SHOWING THE OVERHEAD COAL HOPPER AND SPOUTS

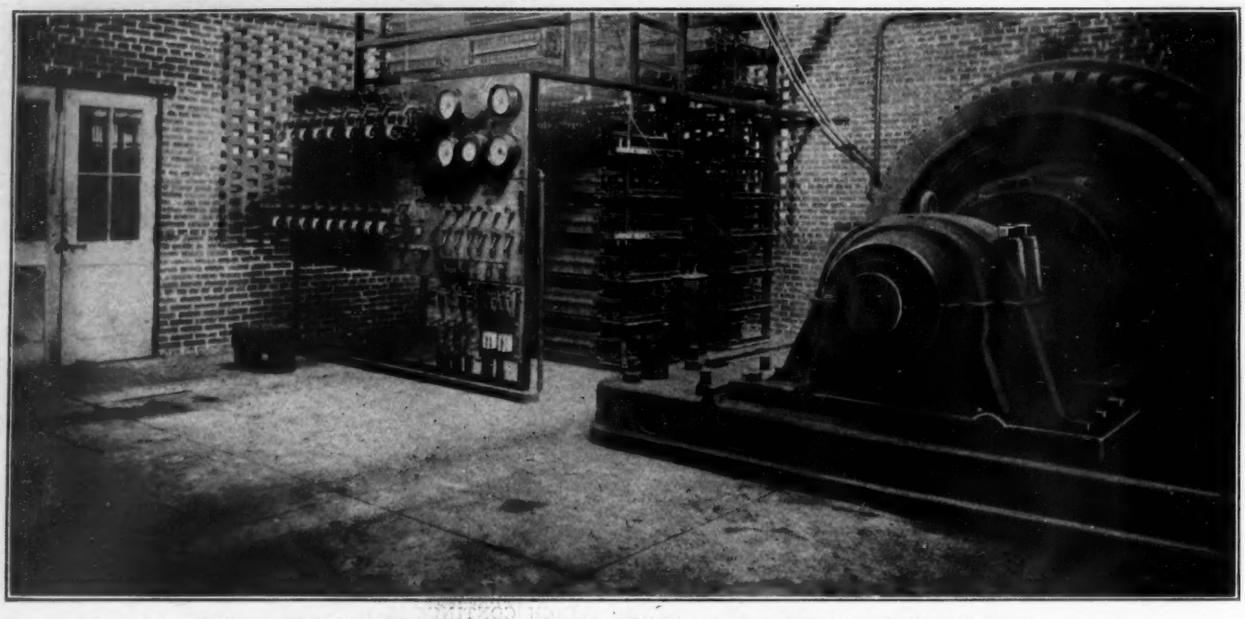


FIG. 6—THE 1,000-HORSEPOWER MOTOR DRIVING THE 16-INCH CONTINUOUS MILL

roller table at one side of this cooling bed.

Billets for the 10-inch mill are conveyed by a roller table from the delivery end of 16-inch mill to the Morgan continuous heating furnace, where the hot bars are subjected to a wash heat, although cold stock is charged also. The billets are charged in 30-foot lengths and are discharged automatically from the opposite end of the furnace to the entry end of the 10-inch mill.

The product of the 10-inch continuous mill, of course, is all finished on the 8-inch mill and consists of rounds from ⅜ to ⅞ inch; squares from ⅜ to ¾ inch, and flats from ¾ x ¼ to 1½ x ⅜ inches. The 10-inch continuous train consists of six stands of rolls, the first two stands at the entry end of the mill being driven by bevel and spur gearing, while each of the remaining four stands is driven through a set of bevel gears for each stand. The pinion housings are similar in construction to those of the 16-inch continuous mill. The speeds of the six stands of rolls beginning at the entry end of the train are respectively, as follows: 33.33, 46.66, 76.61, 109.37, 165 and 240 revolutions per minute. The motor driving this mill is of 500-horsepower capacity and operates at a speed of 250 revolutions per minute. The flywheel, which is 12 feet, 8 inches in diameter, is made of semi-steel and weighs 41,300 pounds. The rim speed is 10,000 feet per minute; rim effect, 900,000 foot-pounds and the radius of gyration of the rim is 5 feet, 5¾ inches.

From the 10-inch continuous mill the material passes to the 8-inch train, where it is finished. The 8-inch mill consists of five stands of rolls, four being direct motor-driven, while the finishing stand, which is offset, is driven by a 10-inch belt from a 52-inch pulley on the motor shaft operating at 366 revolutions per minute, and passes over a 42-inch pulley on the mill shaft operating at a speed of 450 revolutions per minute. The mill motor is of 300-horsepower capacity and operates at a speed of 366 revolutions per minute. The flywheel is made of cast steel with the arms bolted to the hub. It is 10 feet in diameter and weighs 16,200 pounds complete. This wheel has a rim speed of 11,760 feet per minute; rim effect of 208,400 foot-pounds and the radius of gyration of the rim is 4.565 feet. The

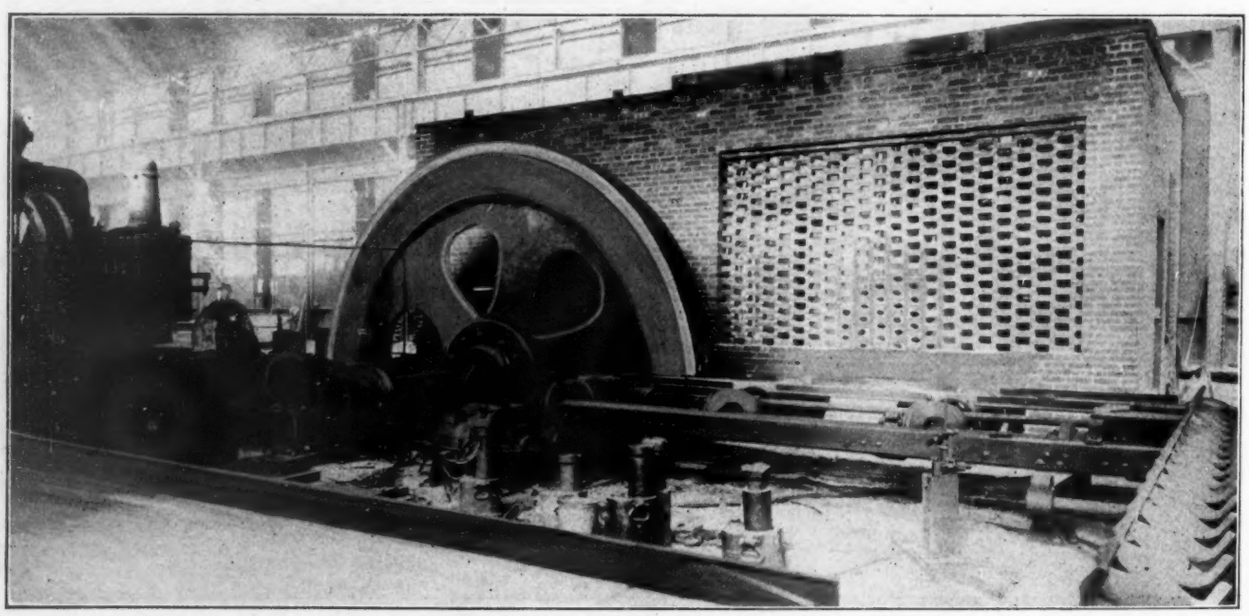
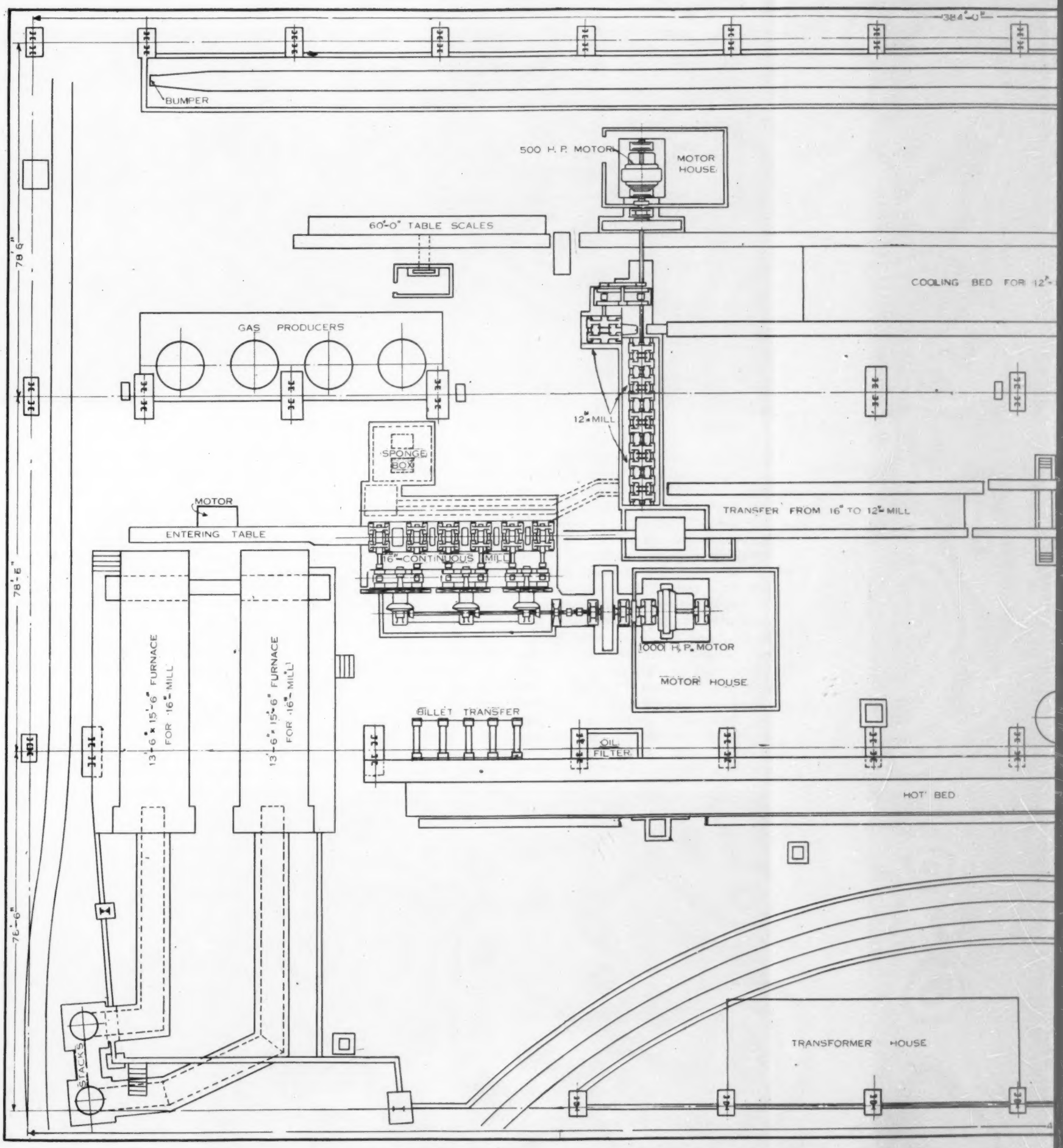
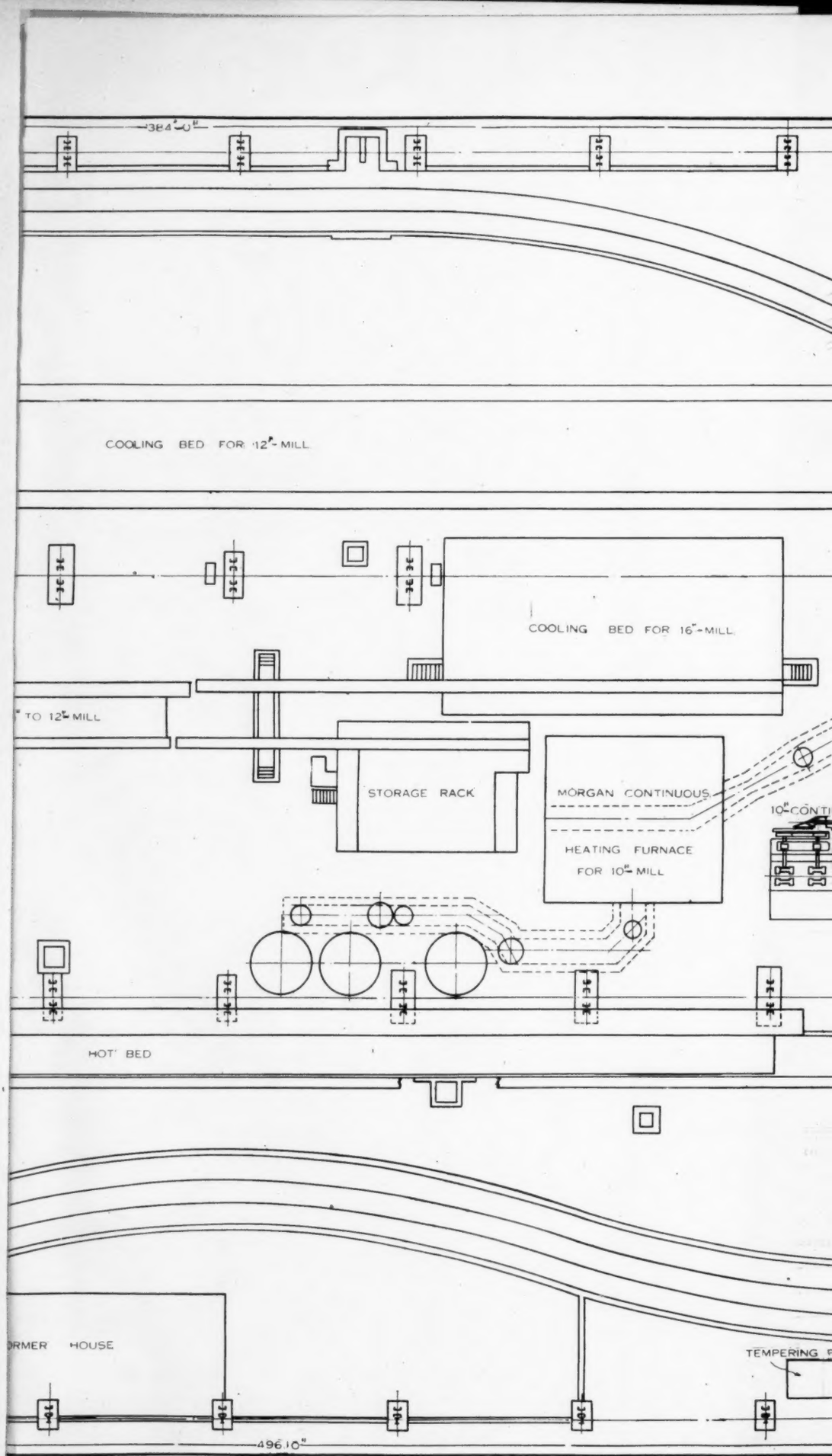


FIG. 7—FLYWHEEL AND MOTOR HOUSE FOR THE 12-INCH MILL

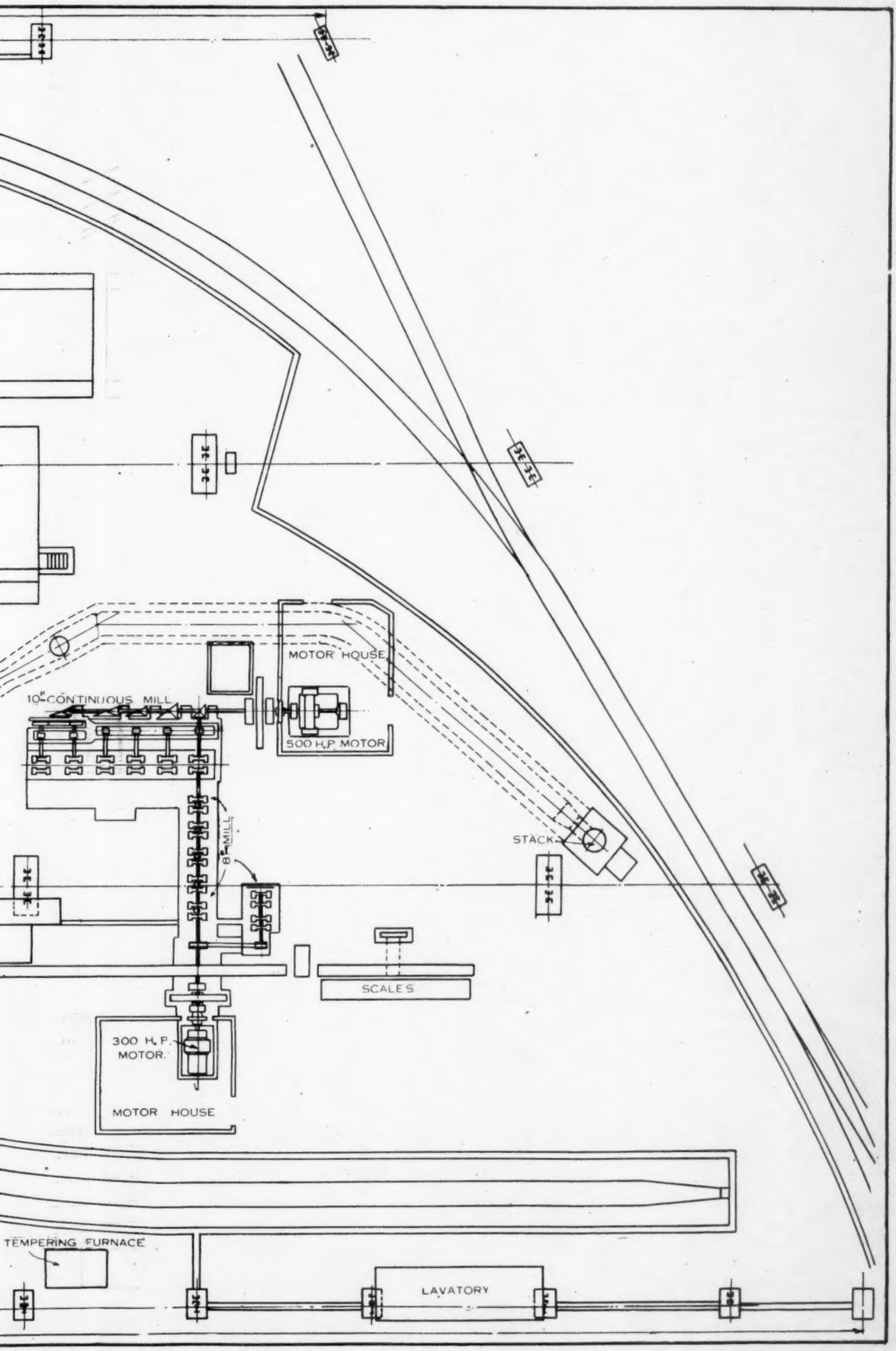


PLAN VIEW OF THE CAMBRIA STEEL CO.'S MOTOR-DRIVEN MERCHANT MILLS, SHOWING THE ARRANGEMENT O

Insert, THE IRON TRADE REVIEW, *May 30, 1912*



SHOWING THE ARRANGEMENT OF THE COOLING BEDS, TRANSFER, HEATING FURNACES, GAS PRODUCERS



PRODUCERS, MOTORS AND THE 16, 12, 10 AND 8-INCH MILLS

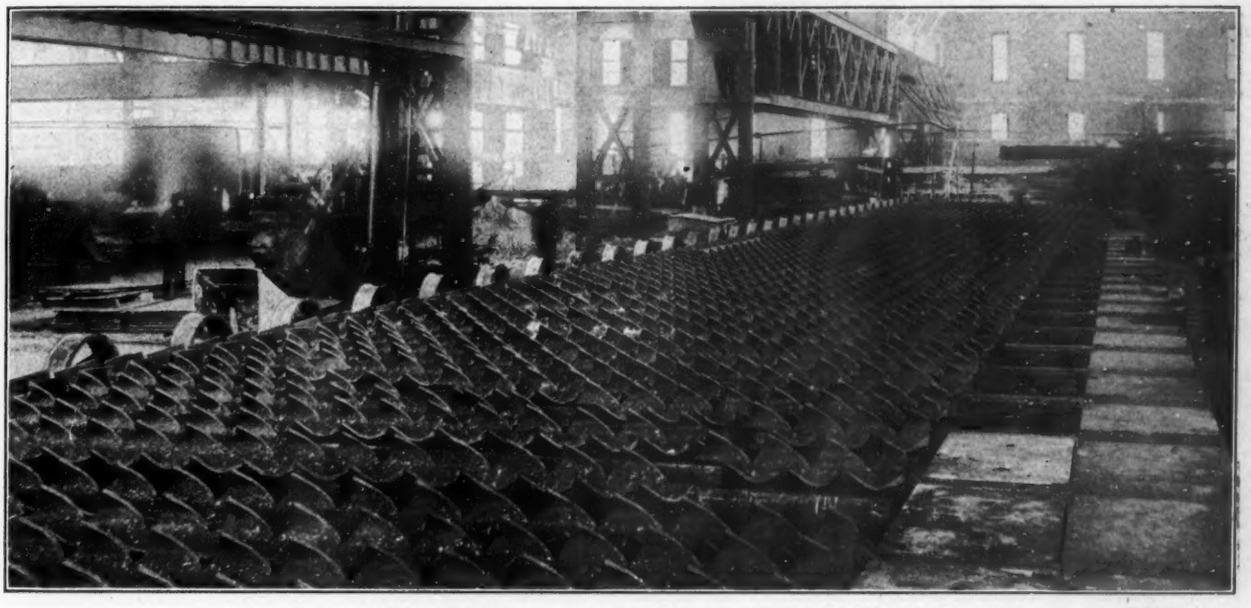


FIG. 8—THE SAW-TOOTH COOLING BED FOR THE 12-INCH MILL

finished product of the 8-inch mill is run out onto an Edwards escapement bed, 250 feet long, built by the Morgan Construction Co. and shown in Fig. 10. To prevent bars from running off the bed if not checked in the hand-operated catching device at the entry end of the bed runout, an exceedingly ingenious, but simple device has been provided at the opposite end of the bed runout. This consists of a curved, enclosed steel box or runout, which deflects the bar underneath the cooling bed, thereby eliminating all possibilities of accidents to the mill employes. The product of the 8-inch mill, after cooling, is cut to length on a combination shear and gage and is bundled ready for shipment.

The charging end of the two large billet heating furnaces for the 16-inch continuous mill is illustrated in Fig. 2, and Fig. 3 is a view of the drawing end. These furnaces are producer gas-fired and the large gas mains from the producers to the furnaces are clearly shown. The gas is generated in four Hughes producers, Fig. 5, installed by the Wellman-Seaver-Morgan Co., Cleveland. For furnishing gas to the continuous heating furnace for the 10-inch mill, three Morgan producers have been provided. The locations of the gas producer plants are shown in the plan view on the accompanying insert.

The coal-handling equipment for the producers entirely eliminates the employment of hand labor. The coal is discharged from the cars outside of the plant into a hopper and is elevated by a conveyor to the continuous hopper over the four Hughes producers and is discharged from chutes into the producers as required. The same overhead conveyor system also delivers the coal to a hopper over the three Morgan producers. A part of the hopper over the Hughes producers, together with the spouts, is shown in Fig. 5.

The merchant mill building is of steel construction throughout and consists of three panels, each 78 feet, 6 inches wide, and the structure is 384 feet long at one end and 496 feet long at the other end. To permit of the installation of the mills and other necessary equipment in the restricted area available, a large portion of the roof and crane runways are supported by girders to eliminate columns. One of these girders over the 12-inch mill is shown

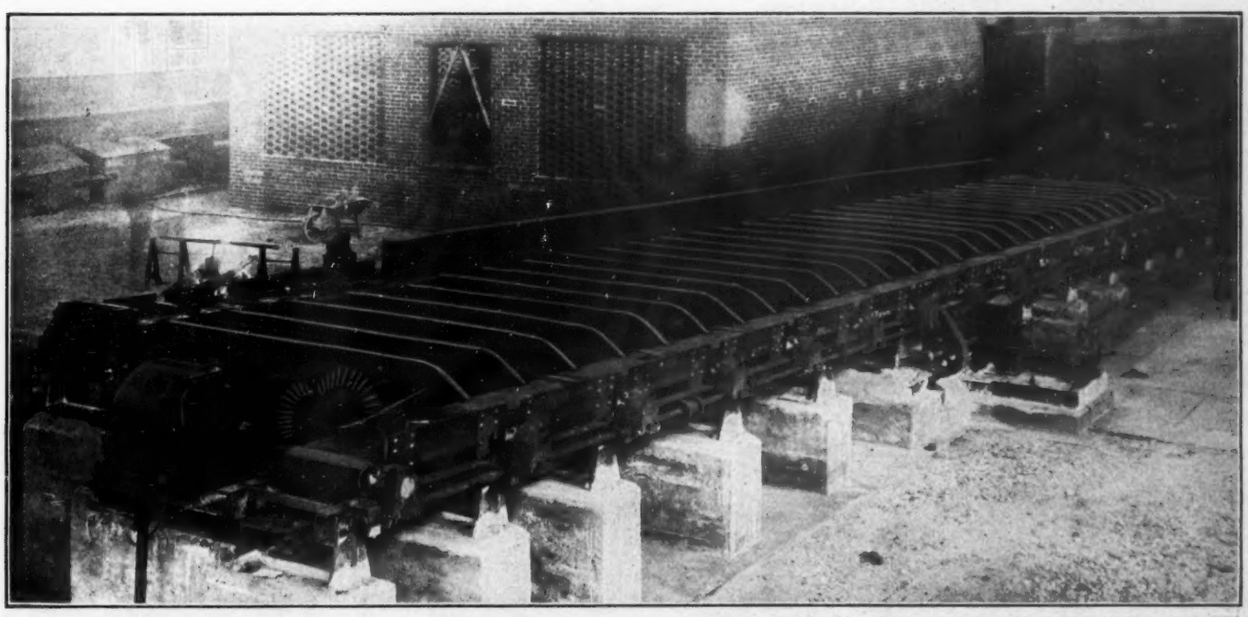


FIG. 9—TRANSFER FROM THE 16-INCH CONTINUOUS MILL TO THE 12-INCH STRAND MILL

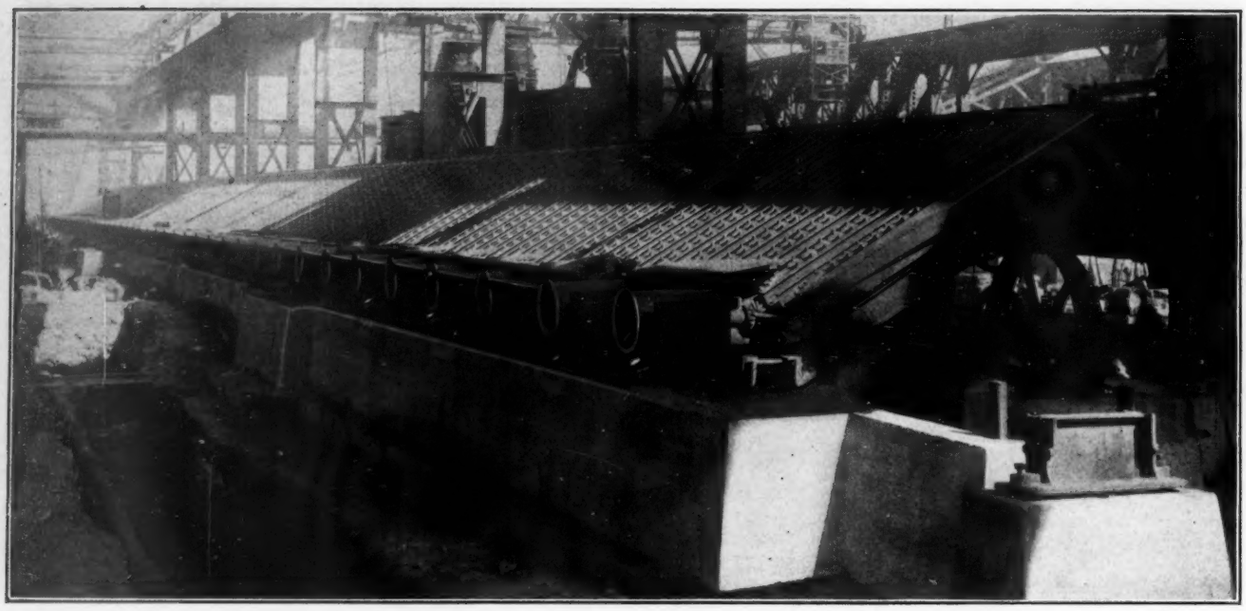


FIG. 10—HERRINGBONE TYPE OF COOLING BED FOR THE 8-INCH MILL

in Fig. 1, and other girders are illustrated in Figs. 4, 8 and 11. The plant is served by three 20-ton traveling cranes, installed by the Alliance Machine Co., Alliance, O.

Deterioration of Coal in Storage

An investigation of the manner in which coal deteriorates under different conditions of storage, conducted by H. G. Porter and F. K. Ovitz, of the United States Bureau of Mines, showed that bituminous coals lost none of their heating value in one year when stored under water, and only 1 per cent during open air storage for the same period. Submerged storage is, therefore, considered to possess no especial advantages, except as a preventive of spontaneous combustion. The latter phenomenon was also made the subject of special study and statistics were gathered from 1,200 sources, giving detailed information concerning 250 cases of spontaneous combustion. A laboratory study is in progress to ascertain the influence of sulphur and different temperatures on the rate of oxidation of coal, and how it is affected by different methods of storage.

The composition and quantity of the volatile matter given off by coal is also being studied with a view to provide data for increasing efficiency in the utilization of coal, through the prevention of waste in volatile matter. During the year, work on a bulletin describing investigations of the volatile matter of several typical American coals was completed, a technical paper on the escape of gas was prepared and work on a report on the deterioration and spontaneous combustion of coal in storage was begun.

The Indiana Electric Appliance Co., Fort Wayne, Ind., which was incorporated recently, advises that there will be no new buildings erected or any considerable quantity of new equipment purchased, as the company will do principally a jobbing business in electrical supplies and electric light and telephone material. In connection with the telephone line material the company has developed a cable terminal which it is now manufacturing.

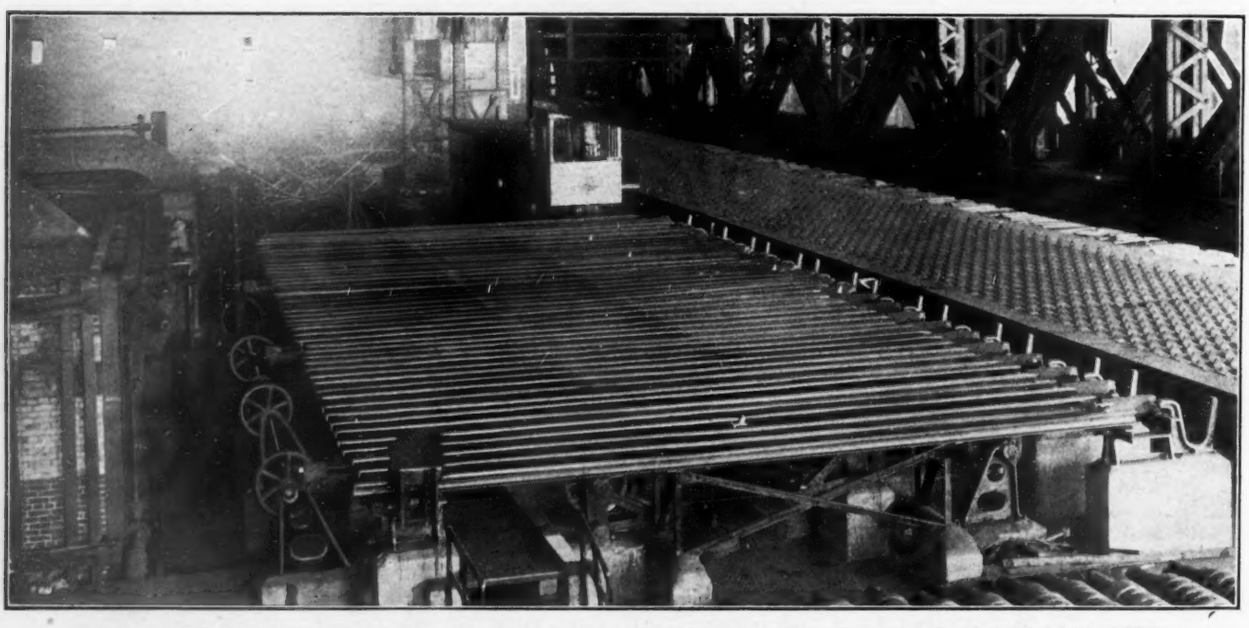


FIG. 11—CAMBRIA TYPE, BILLET COOLING BED AND SAW-TOOTH COOLING BED OF THE MORGAN TYPE

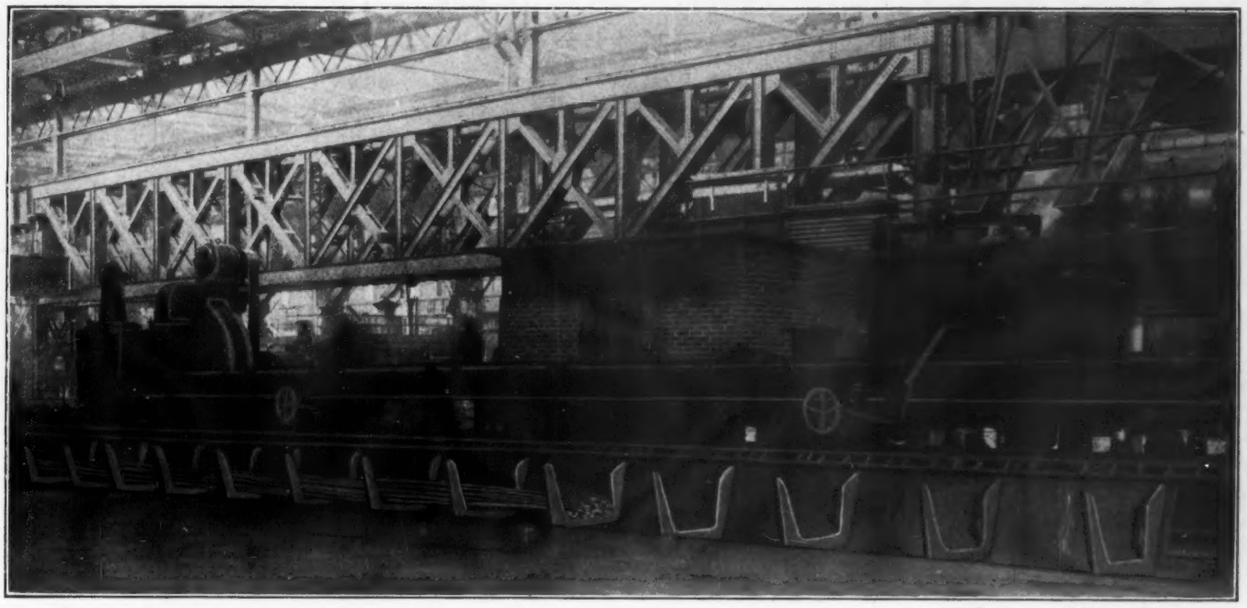
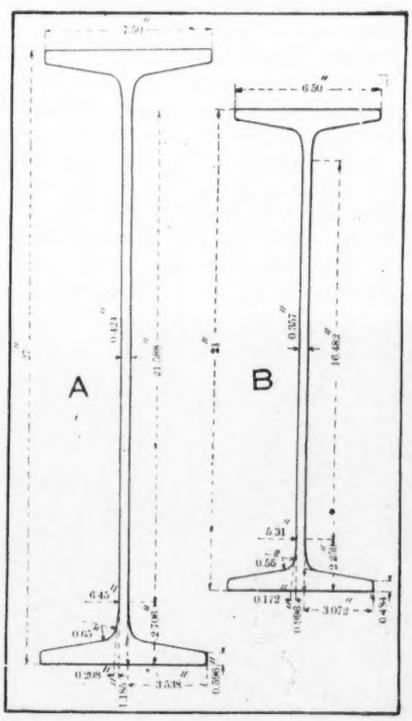


FIG. 12—MORGAN SHEAR AND GAGE FOR THE 12-INCH MILL

New I-Beam Sections

The Carnegie Steel Co., Pittsburgh, has increased its line of structural steel shapes by the addition of two I-beam sections, respectively 21 and 27 inches deep. In buildings, in order to obtain proper stiffness and to provide for the various types of floor construction, it is desirable, frequently, to use deeper beams than required by considerations of safe carrying capacity as determined by the specified floor load, with the result that the full strength of the standard beam section is not always developed. To meet these conditions, the Carnegie Steel Co. considered it desirable to provide sections of lighter weight than the standard sections of the same depth. To make the range of these I-beam sections more uniform, it was concluded to roll one 21 inches deep rather than to furnish a lighter weight of 20-inch depth, and to meet the demands for a still deeper beam, one 27 inches in depth and of the same type as the other sections, is being rolled. The 27-inch I-beam is illustrated at *A* in the accompanying illustration, and *B* is the 21-inch beam. The 27-inch I-beam has a 7½-inch flange and the web thickness is 27/64 of an inch. The weight per foot of the 27-inch I-beam is 83 pounds. The 21-inch I-beam has a flange 6½ inches wide, and the web thickness is 23/64 of an inch. This beam weighs 57½ pounds per foot.

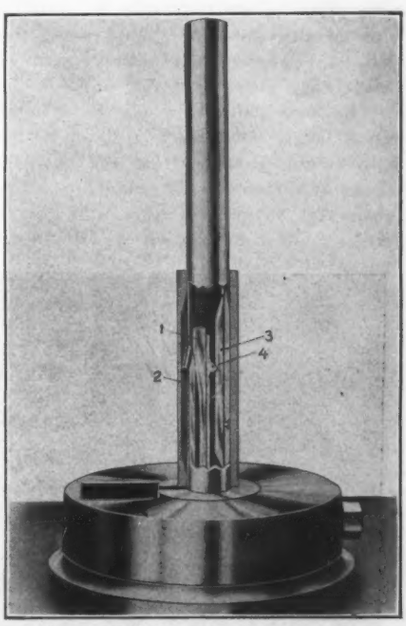


NEW I-BEAM SECTIONS

These new sections are illustrated in a 12-page booklet, issued by the Carnegie Steel Co., which also contains data on safe loads uniformly distributed on beams, as well as the allowable uniform load.

Oil Groove Cutting Device

An oil groove cutting device for use on the keyseating machine, manufactured by Mitts & Merrill, Saginaw, Mich., is shown herewith. This view shows the oil groove in the bushing and the method of operating the working parts. The feed wedge is indicated by *1*; *2* is a cutter; *3* is a pattern attached to the back of the groove in the post of the groove to be cut, and *4* is a follower bar with a knob or projection on the back which follows the pattern and guides the cutter in cutting the groove of corresponding shape and length. In operation, the cutter and follower bar travel together in a line parallel to the pattern. The feed wedge is operated in the usual manner to feed the cutter into the work. An automatic device relieves the cutter on the return stroke. The work is chucked by means of bushings similar to those used for keyseating. Oil grooves up to 3/16 inch deep can be cut on the device as regularly built. An oil groove, 4 inches long and ⅛ inch deep, can be cut in one minute, which includes chucking and removing the work from the machine.



DEVICE FOR CUTTING OIL GROOVES FOR USE ON A KEYSEATING MACHINE

A Large, Modern Wisconsin Machine Tool Plant

Description of the Works of the Gisholt Machine Tool Co.—
The Plant is Distinguished by Refinement in Detail

Most manufacturers today are familiar with the basic principles of shop design and layout, including the arrangement of tools so that the work proceeds through the plant in the most direct manner, the necessity for proper sequence and sub-division of machine operations, the desirability of permanent forms of construction and the requirements of lighting, heating and ventilation. It is rare, therefore, that a new plant built at this late date possesses any remarkable features in design or equipment. In fact the best manufacturing shops at present are distinguished from their immediate predecessors more by refinements in details and superior finish rather than in any other respect. A plant in which these characteristics are especially notable has recently been completed at Madison, Wis., by the Gisholt Machine Co. It is devoted to the manufacture of turret lathes, boring mills and other machine shop equipment and in addition to the standard features expected in a modern plant is distinguished by numerous details and refinements which reflect the aim of the management to keep fully abreast of the times.

The new Gisholt plant is situated on a large, level tract of land within convenient distance from the business center of the city of Madison. The property fronts on one side on a wide boulevard, known as Washington avenue and is skirted on the other by the tracks of the Chicago & Northwestern and Chicago, Milwaukee & St. Paul railways, which furnish ample switching facilities. The general arrangement of the works is shown in Fig. 13. The machine shop, which has been greatly enlarged, stands at the corner of Washington avenue and Baldwin street. It formerly consisted of an L-shaped structure, 360 feet in length on either side and 100 feet in width. To this has been added a new L with a frontage of 234 feet on Washington avenue and 326 feet on Baldwin street. The Baldwin street L is 85 feet wide. Fig. 13 shows both the new and old portions of the building.

The New Plant

The new building is of brick construction with a steel frame and a sawtooth roof, these features being standard in every respect. The sashes in the roof are controlled from the shop floor so that suitable ventilation is insured at all times. The walls have a double row of windows and approximately 75 per cent of the wall space is glass. The building is adequately heated by steam coils, a vacuum system using exhaust steam being employed. There are also live steam connections which may be turned on if necessary. The location of these coils is clearly indicated in Figs. 1, 2 and 3. These illustrations also show clearly the method of artificial lighting which has been adopted. Over the craneways 250-watt tungsten lamps fitted with bowl reflectors are placed. They are 25 feet from the floor over the 10-ton crane and 18 feet over the 5-ton cranes. The lamps are so spaced that each unit illuminates 725 square feet of floor area. The assembling benches, Fig. 3, are illuminated by 100-watt tungsten lamps fitted with bowl reflectors suspended 14 feet above the floor. These units are arranged in staggered rows, there being three for each 725 square feet of floor. The switchboard for the control and distribution of the various circuits throughout the new part of the plant has been installed near the lathe erecting department. It consists of three panels.

The accompanying illustrations show how carefully the problem of crane service has been worked out. The main aisle, Fig. 1, is served by a 10-ton traveling crane, having a span of 40 feet. Another 10-ton crane, 30-foot span, serves the aisle in which the heavy tools shown in Figs. 6 and 7 are now placed. The new L on Baldwin street is provided with two parallel crane runways, each equipped with 5-ton cranes, 22-foot span. One of these cranes is shown in the middle distance in Fig. 2. Fig. 4 shows how

FIG. 1—MAIN BAY OF THE GISHOLT MACHINE CO.'S NEW MACHINE SHOP, SHOWING THE DRILLING LATHE ERECTING DEPARTMENT.

the 5-ton cranes in the side bay connect with the heavy 10-ton crane in the main bay. The runways for the former extend into the main bay under the 10-ton crane runway and material may be quickly transferred from one set of cranes to the other. The small cranes shown in Fig. 4 are 12 feet from the floor and the large one is 18 feet. The electric traveling crane equipment was furnished by the Pawling & Harnischfeger Co., Milwaukee.

Crane Signals

In many shops there is a great deal of time lost in signaling the craneman and waiting when the services of a crane are required at any special point. In the Gisholt plant this problem is very successfully solved by providing push buttons on the posts under the crane runway communicating with a signal bell in the crane cab. There is a specified signal for each button, and when the crane is wanted it is merely necessary to ring and the operator then brings the crane to the proper point without delay. Special chain slings are used for handling lathe beds, as indicated in Fig. 4. In many portions of the shop rope slings are used for crane purposes, it being found that they show the wear more plainly than chains and give a more adequate warning of approaching breakage.

The shop is arranged for the manufacture of lathes and boring mills in accordance with the latest methods, the work being sub-divided and segregated into different departments as indicated in Fig. 13. The use of limit gages and careful inspection throughout the various successive operations cuts down a great deal of the work usually necessary in fitting and assembling, thus resulting in considerable economies in manufacture. In fact a new lathe fitted-up with parts drawn from stock is expected to assemble the first time as easily as an old one may be reassembled. The plant operates on the storeroom principle. That is, the various parts are made in quantities and delivered to the storeroom from which they are drawn for assembling. The finished parts store is situated immediately adjacent to the assembling aisles, its location being clearly indicated in Fig. 13.

FIG. 3—SMALL PARTS ASSEMBLING DEPARTMENT

Sequence of Operation

Referring to Fig. 13, the castings enter the shop at the corner of Baldwin and Main streets and go directly to the roughing and finishing planers and bed-boring machines, shown in Figs. 6 and 7. The small parts are manufactured on automatic machines and are polished and finished in the departments marked 10 to 13, inclusive, in Fig. 13. The grinding department is situated in the main bay at the junction of the old and new buildings.

After the lathe beds have been finished they are carried by the side bay cranes to the central bay where they are transferred to the main 10-ton crane, as shown in Fig. 4. They are then deposited in the erecting aisle, Fig. 1, where the parts which have been brought together in the assembling aisles, Fig. 3, are fitted. Fig. 3 shows the arrangement of the assembling department clearly. It is divided into four aisles, each equipped with a bench and the proper small tools. There is room in each aisle for the storage of completely assembled parts and the passageways are so arranged that persons going through the department do not interfere with the workmen. Another view of the assembling and erecting departments is shown in Fig. 2. This illustrates clearly the method of illuminating this part of the shop and also the arrangement of the crane service. In general, the large machine tools in the plant are driven by individual electric motors and the smaller tools in groups by motors of suitable capacity.

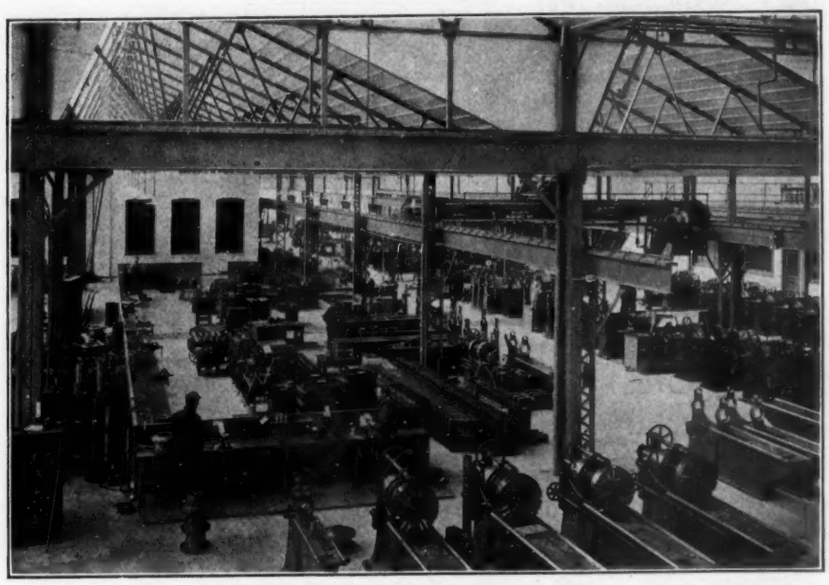


FIG. 2—A CORNER IN THE ASSEMBLING AND ERECTING DEPARTMENT

Tool Grinding Department

The tool grinding department is located near the lathe assembling department and is completely enclosed so that the dust arising from this process is kept out of the main shop.

The primary machining operations

FIG. 4—TRANSFER POINT FOR TRAVELING CRANES

on the heavy Gisholt turret lathe beds are of special interest. The heavy machine tool department is equipped with two roughing planers, one finishing planer and a bed-boring mill, as indicated in Fig. 13. Fig. 6 shows a lathe bed in the finishing planer. This machine, which is driven by an individual 10-horsepower motor, was furnished by the G. A. Gray Co., Cincinnati, and is 42 inches between housings. The method of mounting the work on the planer bed is clearly shown in Fig. 6, which also illustrates the arrangement of the cutting tools. The planer has a double head and the two sides of the ways are finished at once. The ways must be very accurately finished and several gages are used for this purpose. Gage *A*, Fig. 6, measures the width between the sliding ways and their proper height is measured by the gage, *B*. Gage *C* measures the width between the perpendicular outside portions of the ways and gage *D* the proper angle. When the bed is completely planed it is removed from the machine by the traveling crane and transferred to the bed boring mill, Fig. 7. This is a horizontal boring machine furnished by Beaman & Smith. It is driven by a 10-horsepower, 220-volt, 40-ampere Northern motor. In order to insure proper interchangeability the jig, *J*, is used for the various boring operations. The several head-stock bearings are bored with this jig and also the bearings for the lead-screw, feed rod, etc. After the bed leaves this machine it goes to the erecting department.

The electric power for use throughout the works is generated in a plant situated near the Chicago & Northwestern tracks, as shown in Fig. 13. This includes two 300-horsepower, hand-fired water tube boilers, a Nordberg Corliss condensing engine direct-connected to a 300-kilowatt, 220-volt direct current generator, a non-condensing, high-speed engine direct-connected to a 150-kilowatt, Fort Wayne generator and two 75-kilowatt Westinghouse vertical units. The power plant also includes a 50-ampere, 110-volt balancer for the office and shop lighting circuits, together with a switchboard and the usual auxiliary apparatus.

A new two-story brick, tile roof, fireproof office building has been erected in connection with the works. It is 116 feet long and 48 feet high. The first floor is conveniently subdivided into private offices for the various executives and also includes a reception hall, accounting department, stenographic department, toilet and lavatories. The engineering departments and drafting rooms are on the second floor. The office is lighted entirely by the indirect system of illumination. The drafting room illumination consists of clusters or chandeliers containing four 150-watt lamps each, there being one such cluster for each 200 square feet of floor space. The general offices on the first floor are illuminated with similar clusters containing four 100-watt lamps. The illuminating system was designed by Vaughn & Meyer, engineers, Milwaukee. The office is mechanically-ventilated by the Sturtevant system and the ventilators and radiators are controlled by Johnson automatic thermostats.

In designing the new shop considerable thought was given to the installation of suitable conveniences for the comfort and well-being of the men. Ample and unusually well-equipped toilet rooms and lavatories have been installed. In order to prevent the men from loitering in lavatories and wasting their time, a checker is stationed at the entrance and this man keeps a record of the time absorbed by every workman using this convenience. The men enter the shop through a special door at the corner of Baldwin and Main streets and pass immediately into the locker and wash room, Fig. 5. This room is 170 feet long and 30 feet wide and is amply equipped with well-ventilated steel lockers and individual wash bowls. The locker rooms are separated from the shop by a heavy wire net and the time-clocks are placed at the door communicating with the shop. The men, therefore, change their clothes and

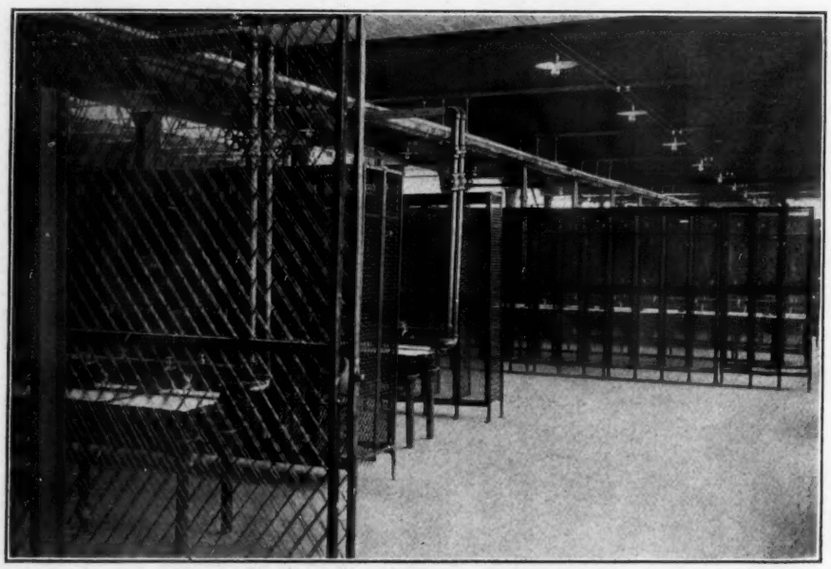


FIG. 5—LOCKER AND WASH ROOM

wash previous to and after registering their time. The floor of the wash room is concrete and provided with adequate drains. A stairway from the wash room communicates with the gallery overhead, where tables are provided for the convenience of the men at lunch. On this gallery an assembly hall or theater also is located, together with the first aid or surgical room. The latter is thoroughly equipped with the latest surgical appliances.

The employes have an organization known as the Gisholt club, the object of which is to provide suitable meetings of an amusing, entertaining or educational nature. Evening entertainments are given frequently, consisting of vocal and instrumental music, recitations, lectures illustrated by lantern slides and exhibitions of moving pictures, using a machine owned by the club. An athletic committee has charge of such indoor and outdoor athletics as the members wish to take up. An orchestra has been organized to provide music for entertainments. Membership in this club costs 50 cents per year and about two-thirds of the employes of the shop belong. Under the auspices of the club a successful band and glee club has been organized. The theater is at the disposal of the club at any time.

Many of the men also belong to the F. & J. Relief Association, organized several years ago by the Fuller & Johnson Mfg. Co., a neighboring corporation. This affords an opportunity for employes of good health and character to provide some relief in case of sickness or injury outside of the plant. The association was organized in 1899. Membership costs $1 for initiation fee and 25 cents per month. In case of the injury or sickness of any member compelling him to remain out of employment, he is, after the first week, paid $4 per week for a period not exceeding 16 weeks. On the death of a member of the association his family or heirs receive $50, or if he be unmarried and has no friends or relatives to attend to the case, it is the duty of the association to see that his remains are properly interred.

In addition to the foregoing facilities, the company has arranged a savings system, whereby the savings of its employes bear 4 per cent interest. The interest is paid on notes of the company which are issued in denominations ranging from $2 to $100, and may be cashed on demand.

The shop operates on a 10-hour day, closing at noon on Saturday. New men are required to fill out the employment slip, Fig. 12. This contains three coupons, a stub which is retained by the employment officer issuing the slip, a middle coupon for the foreman of the department in which the man is to be employed and a right-hand coupon which is handed to the time-keeper and is his authority for entering the man on the pay roll. The timekeeper assigns a locker in the locker room to each new man and takes him to the foreman in whose department he is to work. Each man is furnished with eight brass checks which are used in obtaining drills, reamers, taps, etc., from the tool room and when leaving the company the eight checks must be returned or a charge of 25 cents each is made for any that are missing. When quitting, the man is given a clearance card, Fig. 11, which contains spaces for his number, name, time and reason for leaving employment, together with a record of his brass checks returned and the amount of wages due. This must be presented properly filled out before wages can be drawn.

For prompt and regular attendance during the week the men are given a benefit of an extra hour on Saturday. In addition to getting this extra hour for prompt attendance during the week a man who is neither absent nor late during the regular working hours for an entire month is entitled to one-half day's vacation with pay; but before this vacation can be taken he must have earned 12 half days. In other words, a man who is regular and prompt in his attendance

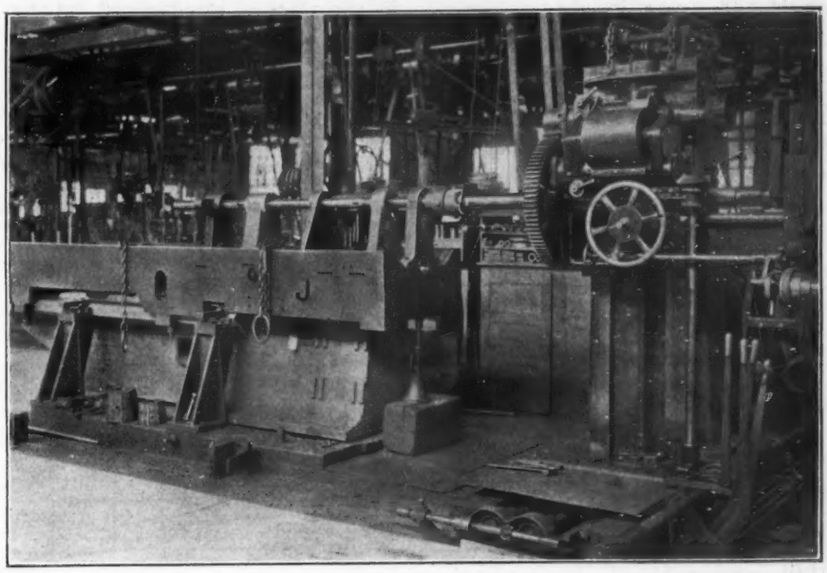


FIG. 7—BORING A HEAVY GISHOLT LATHE BED

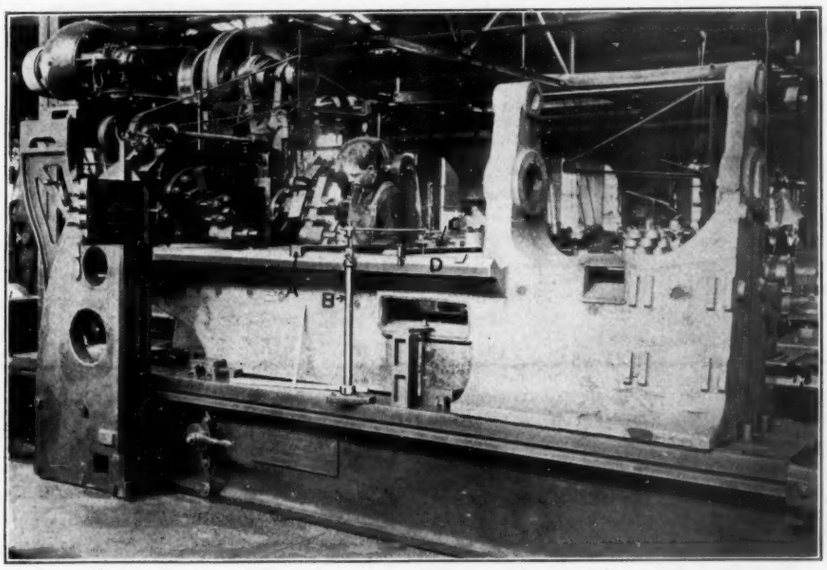


FIG. 6—PLANING A HEAVY LATHE BED

during the year is given a week's vacation with pay.

It is the company's policy to pay its men in accordance with the amount of work they do and, therefore, the premium wage system is employed wherever possible. The various manufacturing operations are standardized and standard times fixed and a premium equal to half of the time saved is paid in all cases where the workman reduces the standard time. About one-third of the work in the plant is standardized. A record of the time required for each premium job is kept on the card illustrated in Fig. 10. This is a salmon-colored ticket containing spaces for the order number, symbol, piece number, car number, number of pieces in the order, name of the operation, clock record, time saved and earned and cost, including labor and shop expense.

Recording time registers, of a special type, are installed in the various departments. These clocks and recording devices are manufactured for sale by the Gisholt Machine Co. and are known as the Gisholt periodograph. The time is computed in quarter hours and a clock record at the beginning and end of each job is made on the card shown in Fig. 10. If the record at the beginning reads 216 and at the close 228, then the elapsed time is 12 quarter or three full hours. A record of the progress of each part of every order rout-

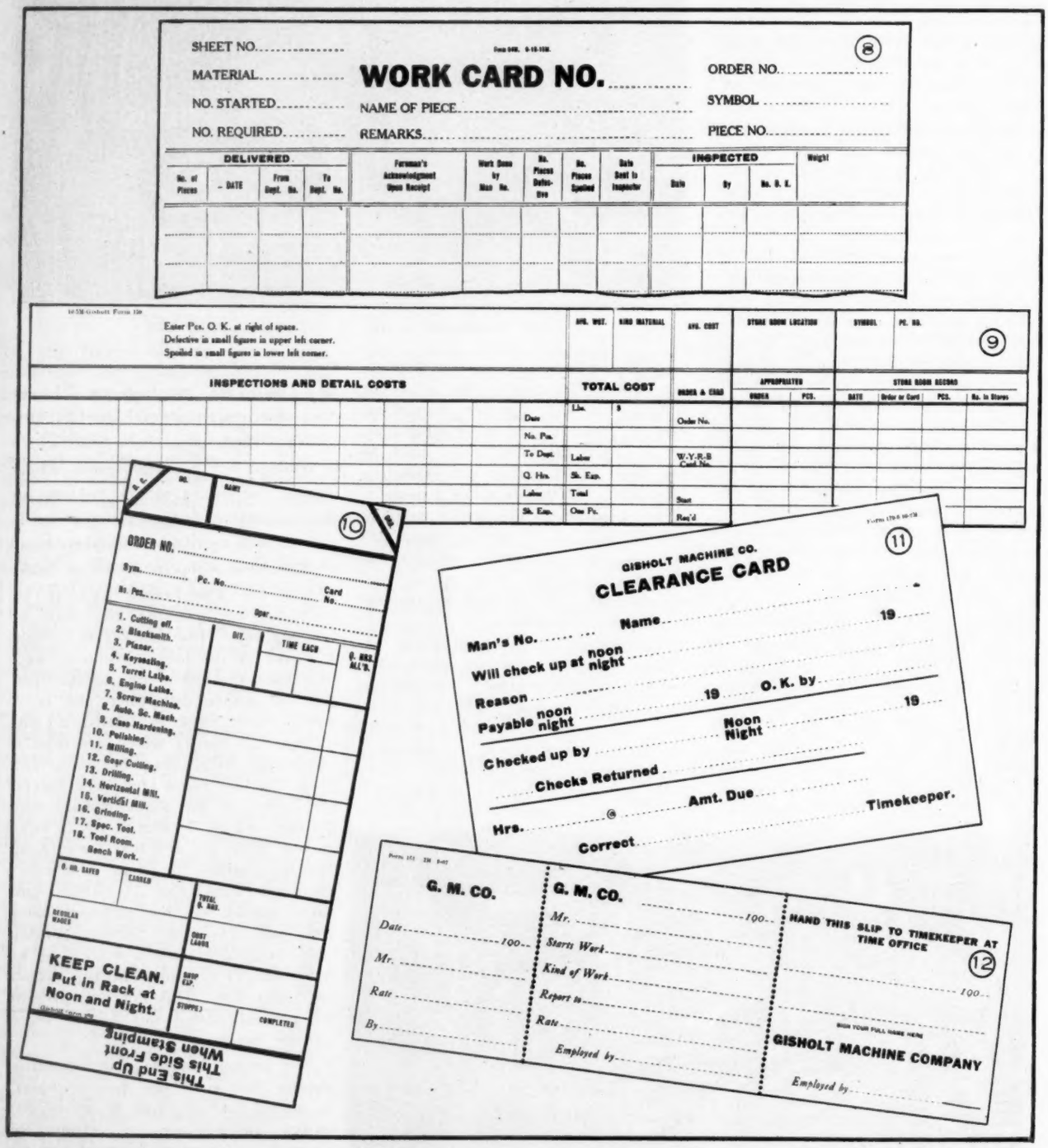


FIG. 8—WORK CARD; FIG. 9—DETAIL COST SHEET; FIG. 10—PREMIUM JOB TICKET; FIG. 11—CLEARANCE CARD ISSUED TO MEN WHEN DISCONTINUING THEIR EMPLOYMENT; FIG. 12—EMPLOYMENT SLIP

ed through the shop is kept on work cards, Fig. 8. These have spaces for the name of the piece, remarks, order number, symbol, piece number, etc., and also contain a record of the delivery of the parts to the storeroom or the proper department with the signature of the receiving foreman. A record of the inspection of the parts is also kept on this card. In fact it contains a complete history of the piece. At the left-hand side of the card are two blanks marked respectively "Number Required" and "Number Started". Under "Number Required" the quantity called for by the order is entered; for instance 20 spindles. It has been found advisable, however, to start more pieces through the shop than the actual number required. Therefore, probably 24 or 25 would be started and this quantity would be marked on the card. This avoids the necessity of running through small lots calling for three or four parts and insures a proper surplus supply at all times. The detailed costs for each piece are collected from the records contained on the work card, Fig. 8, and the job tickets, Fig. 10, and entered on detailed cost sheets, Fig. 9, there being a separate sheet for each piece. This sheet, as indicated by the illustration, contains sufficient space for a complete cost record, also for a stock-record and record of inspection.

The Gray Iron Foundry

In addition to the new departments described in this article the Gisholt Machine Co. also operates a large gray iron foundry in connection with its works. It is housed in a building, 280 feet long and 174 feet wide and contains the usual equipment necessary for the production of light and heavy gray iron castings. A number of molding machines of the roll-over drop type have been furnished by Henry E. Pridmore, Chicago. In addition to the foundry, there is a casting storage and cleaning department, a pattern shop, pattern storage, blacksmith shop and special tool department.

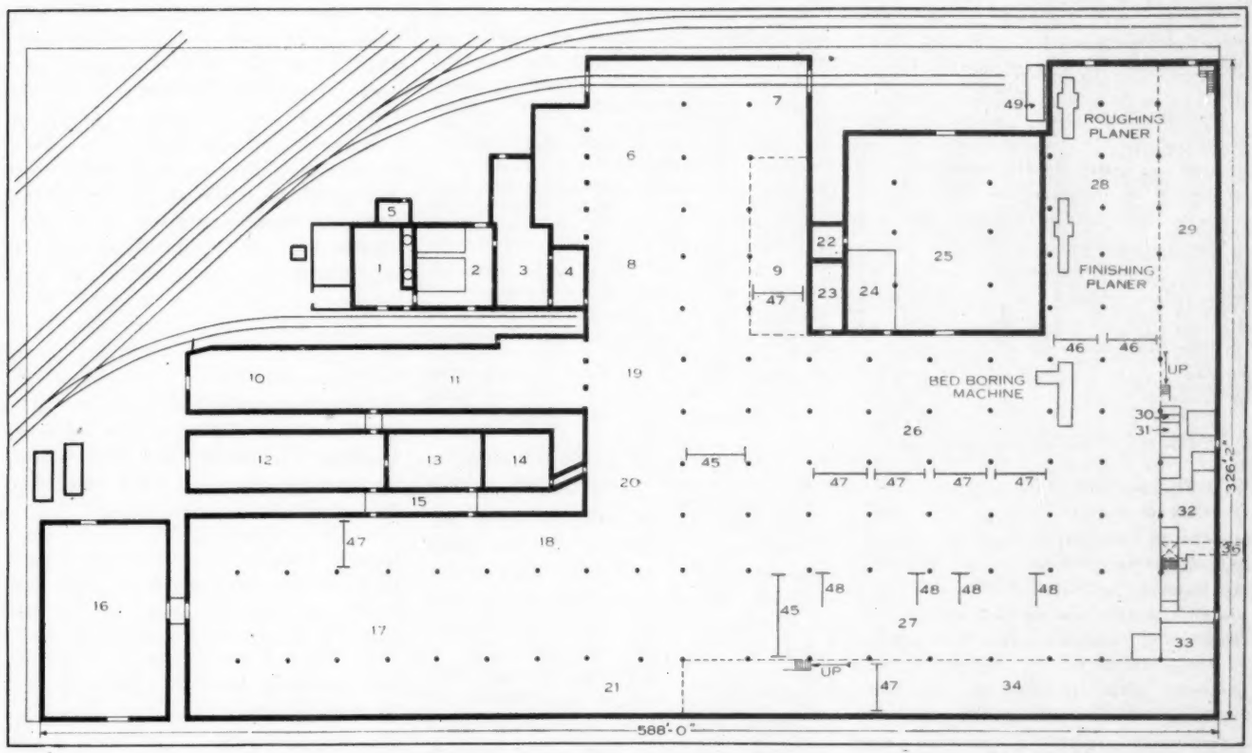


FIG. 13—GENERAL LAYOUT OF THE NEW GISHOLT MACHINE SHOP

1—Coal bunkers; 2—Boilers; 3—Engines; 4—Heating fan; 5—Fire pump; 6—Planers; 7—Shipping; 8—Turret lathes; 9—Jig and tool store; 10—Cutting-off; 11—Automatic screw machines; 12—Blacksmith; 13—Polishing; 14—Millwright; 15—Motor storage; 16—Special tool department; 17—Boring mill erecting; 18—Milling department; 19—Engine lathes; 20—Drilling department; 21—Grinding department; 22—Laundry; 23—Lavatory; 24—Tool grinding; 25—Finished parts store; 26—Lathe assembling; 27—Lathe erecting; 28—Heavy machine tools; 29—Wash room and lockers; 30—Showers; 31—Bath room; 32—Cost office; 33—Tool draughting; 34—Toolmakers; 45—10-ton cranes; 46—5-ton cranes; 47—1-ton hand cranes; 48—1-ton traveling jib; 49—Bicycle shed.

The Swedish Crucible Steel Co., which was organized about a year ago with a plant at Hamtranck, a suburb of Detroit, has developed such an extensive business that it expects to build a 100-foot addition in the near future. A brick office building is now in course of erection.

Collapsible Hand Rails for Panama Locks

One of the interesting features in connection with the operation of the locks on the Panama canal is the mechanism that controls the collapsible hand rails on the top of the various gates. When these gates are closed a standing rail on each side serves to prevent the walker from falling into the water. As the gates are opened to admit the passage of a vessel, these rails are automatically collapsed or folded by means of an unique driving mechanism, motor-operated. The worms, gears and screws for this device represent some very interesting engineering features. All parts are exceptionally heavy, while the design of the entire outfit has been made with a view to quick operation and accessibility. There are 80 sets, 40 right hand and 40 left hand; each gate is approximately 70 feet in length. The contract for the production of these mechanisms was recently awarded to the Earle Gear & Machine Co., Philadelphia, specialists in the manufacture of work of this character, having recently produced a large number of the lock-operating mechanisms for the New York state barge canal.

The Electric Furnace in Steel Manufacture[1]

Possibilities of Producing an Improved Quality of Steel by the Use of this Melting Medium—Interesting Discussions

By William R. Walker

In the manufacture of steel by either the Bessemer or open-hearth process, it is very difficult to remove the last traces of oxygen. In the basic Bessemer process, the over-blown metal, which is an extreme case of oxidation, contains only 0.06 per cent of oxygen. Oxygen in combination with carbon, silicon, iron, aluminum and manganese, and also the combinations of silicates with these oxides, are very deleterious in steel.

My investigations lead me to believe that in the manufacture of steel for the so-called heavy products and steel that is produced in large quantities, a combination of either the acid or basic Bessemer converter and the electric furnace will take a very prominent place. With this combination, it is possible to produce steel extremely low in oxygen and other impurities at a cost that will not be prohibitive.

Electric Furnace Installations

At the present time, there are over 70 electric furnaces of various types producing electric steel in Europe and America. These range in capacity from 1 to 15 tons. There is now under construction in Germany a furnace of 25 tons capacity. A number of these furnaces are competing successfully with crucibles in the manufacture of very high grade steel.

Generally speaking, electric furnaces may be divided into two groups:

1.—Induction furnaces, in which the heat is supplied by a current induced in the bath.

2.—Arc furnaces, in which the arc is struck, either between an electrode and the metal in the bath, or between two or more electrodes so as to heat the metal only by radiation from the arc.

In operating the electric furnace at the present time, the most prominent methods or combinations are as follows:

1.—Oxidation of silicon, carbon and manganese in an acid lined Bessemer converter and removing the phosphorus in the basic-lined electric furnace with an oxidizing slag and then recarburizing and with the aid of manganese and carbon and a new reducing slag removing oxygen and sulphur and dead melting as in the crucible process.

2.—Removal of silicon, carbon, manganese and phosphorus in a basic-lined Bessemer converter and further removing phosphorus (if desired) in the basic-lined electric furnace with an oxidizing slag, and then with the aid of manganese and carbon and a new reducing slag removing oxygen and sulphur and dead melting as in the crucible process.

3.—Removal of silicon, carbon, manganese and phosphorus in the basic open-hearth furnace and then recarburizing and in the basic-lined electric furnace with the aid of manganese and carbon and a new reducing slag removing oxygen and sulphur, and dead melting as in the crucible process.

4.—Melting of cold scrap of inferior quality in a basic-lined electric furnace; removing phosphorus with an oxidizing slag and then recarburizing and with the aid of manganese and carbon and with a new reducing slag removing oxygen and sulphur and dead melting as in the crucible process.

5.—Melting high grade materials in the electric furnace and dead melting as in the crucible process.

The phosphorus is removed in the basic electric furnace in the same manner as in the basic open-hearth furnace—that is, by the use of lime and oxide of iron—and the resulting slag containing the phosphorus is removed and a new slag formed consisting of burnt lime and fluor-spar; and when the slag is melted, coke dust is added, which, coming in contact with the lime in the slag and the electric arc, produces carbide of calcium. The free carbon and possibly the carbide of calcium in the slag, with the aid of carbon and manganese in the bath, eliminate the oxygen from the steel.

As compared with the Bessemer and basic open-hearth processes, the electric has the following advantages:

1.—The more complete removal of oxygen.

2.—The absence of oxides caused by the additions, such as silicon, manganese, etc.

3.—The production of electric steel ingots of 8 tons in weight and smaller that are practically free from segregation.

4.—Reduction of sulphur to 0.005 per cent, if desired.

5.—Reduction of phosphorus to 0.005 per cent, as in the basic open-hearth process, but with the complete removal of oxygen.

As evidence of the reducing properties of the slag in the basic electric furnace, it has been found that if oxide of manganese and oxide of iron are thrown on the molten slag, the oxides are reduced to the metallic state and the reduced metal goes into the bath. Blown metal from the acid Bessemer converter, containing only 0.10 to 0.20 per cent manganese, has been completely deoxidized in the electric furnace without addition of manganese or aluminum, the usual amount of silicon being added in the steel ladle. Rails made from this steel are now in service. The composition of one heat of this steel is as follows:

	Per cent.
Carbon	0.55
Manganese	0.13
Sulphur	0.13
Silicon	0.017
Phosphorus	0.022

These rails are comparatively soft, but are showing superior wearing qualities compared with the Bessemer rails in the same track and under the same service conditions.

Electric steel ingots crack much less in rolling than either Bessemer or basic open-hearth steel. Cold electric steel ingots when heated and rolled into rails, roll extremely well.

Electric Steel Rails

At the present time, there are approximately 5,600 tons of standard electric steel rails in service in the United States. These rails have been in the track about two years. During the past winter, some of these rails have been subjected to very low temperatures — in some cases as low as 52 below zero, Fahr., and are being exposed to all the possible conditions of severe service. It is too early to state much about the wearing qualities of these rails, but from present indications it would appear that rails made by the basic electric process can be made somewhat softer than by either the Bessemer or basic open-hearth process and show highly satisfactory wearing qualities. Up to the present time, we have not heard of any basic electric rails in use in this country being broken in service.

For experimental purposes, I have

[1]Presented at the annual meeting of the American Iron and Steel Institute.

had made a small tonnage of electric steel rails, which have varied in analysis as follows:

	Per cent.
Carbon	0.50 to 0.75
Manganese	0.13 to 0.80
Silicon	0.10 to 0.40
Phosphorus	0.02 to 0.06

On account of the wide variation in the chemical composition of this steel, it would, in a paper of this nature and with the limited time at my disposal, be difficult, without going into considerable detail, to discuss the physical properties of these rails. It might be stated, however, that electric steel of a given tensile strength has a slightly greater amount of elongation than basic open-hearth steel and that electric steel is somewhat denser than basic open-hearth or Bessemer steel. With the electric furnace, it is possible to produce steel, which when magnified 1,000 diameters, shows no oxides or slag enclosures.

Cost of Producing Electric Steel

As high grade electric steel can be produced at a lower cost than crucible steel, there has been a gradual increase in the production of electric steel for certain purposes where crucible steel was formerly employed and where it has been demonstrated electric steel can be successfully used. This increased production has not been so marked where the object has been the improvement of steel entering into products manufactured in large quantities where the expense involved for experimental work is very great and where of necessity it takes several years to demonstrate if rails and other products made by the electric process are superior to those made by either the Bessemer or open-hearth process. From present indications, it would seem probable that there will be a decided increase in the production of electric steel for these products in the near future.

Discussion by E. B. Clark

"Dr. Walker's paper leaves little to be said at present upon the phase of electric furnace working to which he has chiefly devoted himself, namely the improvement of rails and other heavy steel products. The experience cited by Mr. Walker as having been had with rails rolled from steel refined in the electric furnace, while perhaps not conclusive at present, still points strongly to the wisdom of future experimentation and is confirmed by the experience with electrically-refined steels in other directions. Apparently he ascribes the superiority of electric steel to its thorough deoxidization. There is much in support of this belief, and the reason would appear to be that the electric furnace offers favorable conditions for treatment by deoxidizing agents. The high temperature keeps the bath fluid and promotes chemical activity, and it is impossible for the steel to take up oxygen again from the neutral atmosphere in the furnace. Under these conditions, it is natural that an excess of deoxidizing agents would hardly be necessary unless needed for alloys. The conditions are self-evidently more favorable than in an open-hearth furnace, just as in the latter they are more favorable than in a Bessemer.

"If electric steel has been made properly it is capable of most advantageous rolling, forming, casting and machining, and as tool steel has excellent cutting properties. It sometimes fails to come up to expectations for certain purposes, however, and gives evidences of peculiarities of disposition not easily explained. Generally, the peculiarities are advantageous, but the reasons are not always clear. Perhaps the heat-treatment of molten steel has an effect upon its subsequent quality. If so the type of electric furnace in which the steel is refined must be taken into consideration, for the method of the application of heat to molten steel differs considerably in the different types of furnaces.

Types of Furnaces

"An electric furnace for steel making differs fundamentally from other metallurgical apparatus for refining iron only in that the heat required is supplied through the medium of the electric current. Thus, the electric furnace has the advantage that no contaminating gases need be brought in contact with the molten steel. There are two general methods of introducing the heat, distinguishing the induction furnace from the arc furnace. In the former the current is induced directly in the bath of molten metal and heats the metal by overcoming its own resistance, whereas in the latter an arc is established over the bath which heats the metal or slag, or both, directly. The induction furnace has certain electrical disadvantages, and also involves certain mechanical difficulties, whereas on the other hand it is free from electrode cost and trouble. The arc furnace is handicapped with electrodes, but on the other hand seems to be simpler of operation and to offer some metallurgical advantages. Several types of arc furnaces have been developed, typical of these being furnaces in which the arcs are maintained between the electrode and the bath, and furnaces in which the arc plays over the bath. Both of these types have certain advantages and certain disadvantages. The submerged arc furnace is more extravagent of electrodes, but less severe on linings than is the surface arc type, but on the other hand the heat is localized under the electrode in the former case and distributed over the whole bath in the latter case. What influence, if any, this heat distribution has upon the quality of steel is open to argument.

Electric Furnace Development

"There are several well-established and quite different lines along which electric furnace practice is being developed at present. The final refinement of large quantities of steel to be used in the manufacture of heavy steel products, this being the field which has been studied and discussed by Mr. Walker, is the one possibly which offers the greatest regard, but is also the one which involves the greatest expense and difficulty of investigation. For such work it is necessary that the amount of electrical heat required should be reduced to a minimum, which means that steel must be made by some other process and only finally treated in the electric furnace. Even such refinement as is found necessary must be reduced to a minimum, because the formation and removal of slags involves the use of a most expensive form of heat. In the final analysis it may be said that if electrical refining is to prove successful for heavy products, it must be found that an improvement of quality is assured sufficient to justify the cost, which means, of course, the use of large units and economical methods of handling.

High Grade Steel

"For the very complete refinement of the highest grades of steel, however, the electric furnace is already thoroughly established. Any product possible by the crucible process is possible by the electric furnace, and in most cases with advantage in favor of the latter. Intricate alloy steels may be made with precision. The high temperatures possible facilitate the reactions and alloys need not be used for the purpose of removing oxides and occluded gases. Very low carbon steels may still be kept fluid at the high temperatures. For certain foundry operations electrically-refined steel is especially adapted. Small steel castings require a very hot metal and one free from slags and gases. The baby Bessemer gives a hot steel, but one which runs high in oxides and often high in sulphur, so castings are

apt to have blow-holes and cracks. High manganese and high carbon contents are required to give sound castings, so annealing generally is necessary. The electric furnace obviates these objections by giving a metal at once hot enough to pour into thin molds and still perfectly free from slags and gases. Metal of exactly the required composition may be obtained, and alloys of any desired analysis may be formed. Even electric smelting, though at a great apparent disadvantage by reason of high fuel costs and small units, has made some progress."

Discussion by T. W. Robinson

"Three years ago the 15-ton basic-lined Heroult furnace erected at the south Chicago works of the Illinois Steel Co. made its first heat. At that time it was the largest electric furnace in existence, and I know of none of greater capacity that has as yet been put into operation, although I understand there are several 20 or 25-ton furnaces in Europe now in process of construction.

"The application of electricity to the manufacture of steel is, commercially speaking, a new process, and the installation at South Chicago was a new adaptation of this new process. Our purpose was to demonstrate whether it was feasible to successfully operate a large electric furnace and make electric steel in large tonnages. At the time the South Chicago furnace was started, the electric furnaces used in the manufacture of steel here and abroad were small, running from a ton or less to five tons in capacity. The aim in their development was largely to find a cheaper process than the crucible process. Our aim was to command a superior steel and if possible at a cost that would permit of its use in such products as rails. Our problems, mechanical, metallurgical and otherwise, proved many, and our experience soon demonstrated that the conditions surrounding the successful operation of a large electric furnace were in many respects entirely different from those involved in the use of smaller units. In illustration, the demands of a 15-ton electric furnace proved to be far in advance of the art of manufacturing electrodes. Our necessities represented a requirement that the electrode manufacturers of America and Europe had not been called upon to meet, and it took much time and money before there was finally accomplished the 20-inch round amorphous carbon electrode that is now being used at South Chicago.

"In a company like this it is perhaps unnecessary to state that the electric current, as such, has no influence, occult or otherwise, in the manufacture or upon the character of so-called electric steel. The transformation of electrical energy, however, is capable of producing an extremely high heat under comparatively ready control, and of a source of rare chemical purity. While in the application of the electric furnace to the metallurgy of steel there is usually embodied the preliminary removal of impurities by oxidation, the thermal and chemical conditions that obtain are unusually favorable to the final purification of the metal.

"Although it has proved perfectly feasible to make steel of superior quality from even low-grade, cold material, the usual practice at South Chicago is to refine in the electric furnace full-blown metal from the Bessemer converter.

"While the electric furnace at South Chicago has probably operated on a greater variety of products than any other furnace in the world, especial attention has been given to the production of electric steel for rails. As Mr. Walker has stated, the results have been most promising.

Teeming Electric Steel

"The steel in teeming lies much more quietly than is ordinarily the case with open-hearth or Bessemer. The ingots when split show a very solid metal, with a remarkable freedom from blow-holes. The pipe, unless filled, is as deep as with open-hearth or Bessemer steel. Segregation is at a minimum, and the steel is exceptionally homogeneous. Chemically speaking, almost any result within reasonable limits can be obtained. Physically the metal is more dense than either open-hearth or Bessemer. In its ultimate strength and elongation for the same carbon there is but little difference between electric and open-hearth in the higher carbons. In the lower carbons, electric steel has a tendency to a higher tensile and a possibly somewhat lower elongation.

"Many etched sections of rails indicate that the steel from the electric furnace is peculiarly uniform in structure, and it appears to be exceptionally free from oxide and slag enclosures as partially determined by microscopic examination. In fact such superiority as electric steel may have probably largely lies in its relative freedom from oxygen.

"How much there may be in the theory advanced by some that the characteristics of electric steel are partially due to the influence of the peculiar thermal conditions upon its molecular structure, I cannot say. Certain indications, however, point to there being more in this hypothesis than is generally recognized.

"As Mr. Walker has stated, we have had thus far received no report of any breakage from the 5,600 tons of standard steel rails that we have shipped. Some of these rails have been in track for 2½ years or more.

"Some of the first rails that we produced were intentionally made upon the soft side, running as low as 0.55 per cent in carbon. Our later electric rails, of which the laboratory results would indicate a relatively better wearing quality, have been made of 10 or more points higher in carbon.

Ideal Steel a Possibility of Electric Furnace

"I recognize that on account of the comparatively short time that the electric rail has been in service, any statement in respect to its comparative quality is open to question. Of course the final verdict on the merits of any steel must be in that metallurgical court of last resort—result in service. But whatever may be the verdict, American steel practice and the public must be the gainers from the extensive work that has been done in the endeavor to produce, through the electric furnace, a rail of superior quality."

"Mr. Walker's paper confirms my own observations as to the new method of refining steel and making an article that is of the very highest quality in every respect. We have heard a great deal in years gone by of the necessity, if high class steel was desired, of melting it in a reducing atmosphere, but this has never been possible in the furnaces which we had at our command because with the reducing atmosphere there came reduction of temperature too low for the proper melting of the steel; but with the electric furnace all these conditions are changed, and we can get the highest temperatures known in the arts without the presence of any free oxygen whatever.

"The electric furnace makes possible the production of ideal steel for any purpose whatever; whether it be the softest steel used for high grade sheets or plates, medium steel for axles and shafts, rail steel, or any of the numerous grades of ordinary tool steel, or for high speed alloy tool steel, or projectile steel.

"I think that the most important use that electrically-refined steel can be put to is the manufacture of rail steel. The railroads of this country have been learning some very costly

lessons during the past few months as regards steel rail specifications, and it would seem that now they should be ready to buy the best and safest rail that can be made without regard to a slightly higher price or possibly a little more rapid wear.

"Rails made from electrically refined steel seem to me to offer the very best solution to the problem for the following reasons:

"An ingot is produced which from all the evidence we have is almost perfect in structure. There is almost an absolute freedom from blow-holes which is caused by the freedom of liquid steel from oxides and gases of all kinds; but most important, ingots as large as 8 tons can be made which are practically free from segregation. Mr. Walker's statements in regard to this confirm my own observations.

"The ingot can be made practically free from phosphorus and sulphur, and on account of its freedom from oxides and gases little or no manganese is necessary in the steel; thus the steel maker is able to make the ideal steel which is absolutely free from injurious impurities, and contains nothing but iron and the carbon to give it the necessary hardness for wear. It will probably be found that on account of its greater density not as much carbon will be necessary to give it good wearing qualities, as is the case in ordinary Bessemer or open-hearth steel.

"On account of its freedom from oxides and gases, there is almost perfect freedom from cracking in rolling. This must make a better rail on account of more perfect surface, and freedom from little imperfections which start the wear and are also good starting places for cracks.

Freedom from Segregation

"The most valuable peculiarity in electrical steel seems to me to be its freedom from segregation. Most, if not all the failure of rails during the last winter have been practically on account of bad defects caused by piped ingots, the defects from which were not discovered in the blooms or in the finished rails.

"I think it more than likely that it may be found that the best rail steel if made from the electrical furnace can be made by making small additions of some of the numerous metals used as alloys, such as chromium, titanium, nickel, vanadium or tungsten. The effect of these different metals on steel is not yet generally understood, but it offers a very attractive field for study and experiment. From my own observations, I think that a small percentage of chromium, not to exceed 0.25, and a very much smaller amount of titanium would have a very good effect on the density of the rail, and would at the same time toughen and strengthen the steel.

"Some of the gentlemen present may say to me, as my friend Capt. William R. Jones did to William A. Sweet, when he came down to Pittsburgh many years ago to the meeting of one of the engineering societies, to tell them how to make good rails. Said Captain Bill, "What do you know about making rails, you never made any," which would be a good criticism of anything I might say about this subject, so I will stop right here."

RESCUE CAR

May be Sent by Government to Iron Mining Region of Michigan.

Marquette, Mich., May 27.—The cave-in at the United States Steel Corporation's Norrie mine, at Ironwood, Mich., which entailed the loss of seven lives and imprisoned six miners for many hours, serves to emphasize the importance of the movement now afoot in the Michigan iron country to have one of the rescue cars of the federal bureau of mines sent to the upper peninsula.

It is planned to have the car stationed at some central point from which it would be quickly available for use at any mine in the region. Petitions have been circulated among the miners and it is understood that the project is now under consideration at Washington.

Much impetus has recently been given the movement by the contemplated formation of a chapter of the American Mining Congress in upper Michigan. This organization, which comprises in its membership representatives of every phase of the mining industry, waged a campaign for years to procure the creation of a federal bureau of mines.

Tube Makers Combine

Between 30 and 40 of the leading English tube makers have combined in order to put a stop to the ruinous price-cutting, which has prevailed in the tube market for three years. The action follows a similar step, taken some two months ago by the Scottish tube concerns. Prices of tubes in England have already been advanced from 2½ to 5 per cent.

Steel Cars Commended.—The more general use of steel cars has caused a decrease in the death rate among railway postal employes. Joseph Stewart, second assistant postmaster general, in a recent address, stated that there were no deaths in mail cars from accidents during the past year, while in the previous year there were 12. "This is due directly," said Mr. Stewart, "to the increased use of steel cars."

EIGHT HOUR BILL

Called Before Senate by Borah—Amendments are Accepted.

Washington, D. C., May 28.—Senator Borah has called up for consideration in the senate his bill limiting the hours of labor to eight hours a day on all work done for the United States government. He said there is strong opposition to the measure, but that he hopes to secure its adoption.

Amendments were accepted eliminating from its provisions materials going into battleships now under construction, material for the Panama canal up to July 1, 1915, and emergency work, such as repairs to levees. Senator Lodge's amendment for a 48-hour week instead of an eight-hour day was rejected by a vote of 35 to 14.

New Blast Furnace Lighted By Girl

Reading, Pa., May 28.—The torch was applied last week to the new "A" blast furnace of the Warwick Iron & Steel Co., near Pottstown, Pa., by Lucetta Ibach, daughter of P. Frank Ibach, of Pottsville, Pa., superintendent of the bridge department of Eastern Steel Co. The furnace is of the thin-lined type, is 85 feet high and has a 14-foot hearth. The hearth jacket consists of an inch-and-half firebox steel behind which is inserted cast iron water-cooled plates. The stack is being blown in on low phosphorus. No. 1 furnace, recently put out of blast, is being replaced by "A" furnace.

Build Power Plant. — The newly formed Youghiogheny Power Co., of Maryland, which was chartered recently to build a hydro-electric power plant and dam across the Youghiogheny river at Friendsville, Md., plans to extend power transmission lines to Pittsburgh with an initial capacity of 40,000 horsepower. About $4,000,000 is involved in the proposed improvement.

Additions to the equipment of the Allen Engineering Co., Memphis, Tenn., will be made when the company enters its new quarters, a $40,000 reinforced concrete building now in course of construction. It manufactures machinery.

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Forty Years of Valuable Service

Forty years ago, or, to be exact, on Jan. 1, 1873, James M. Swank became secretary of the American Iron and Steel Association, which had been formed in 1855, largely for the purpose of emphasizing the need of full tariff protection to the American iron industry. Mr. Swank, as he has written in recent years, at once recognized that to conduct such work intelligently and conscientiously, accurate statistics of production were essential, and accordingly he established a system of gathering statistics of the production of iron and of the limited quantities of steel then being made. His first annual statistical report covered the year 1872, but in those early years, as well as in the reports with which the present generation is familiar, related statistics, as of coal production, imports and exports, railroad construction, shipbuilding, iron and steel production in foreign countries, etc., were given in full detail.

At the close of this year, the work of the American Iron and Steel Association—really Mr. Swank's work, as he is almost the sole surviving official of the association—will be taken over by the American Iron and Steel Institute. Mr. Swank will then have published his fortieth annual statistical report of the American iron and steel industry. Forty years of such service constitute a record of which anyone may well be proud. Mr. Swank has not only done the work; he has done it exceptionally well. He is called a statistician, and truly he is, but by nature he is not a statistician, but a historian. There are those who are statisticians because they love figures and what one can prove by them. Mr. Swank is not one such. He loves facts, and figures because they represent facts, chiefly the facts in the growth of this wonderful American iron industry, which for a longer period even than Mr. Swank's long service to it, has doubled its tonnage every decade. In 1872, the year for which Mr. Swank first gathered full details, the pig iron make was 2,854,558 net tons—the unit in the early years—but since then we have seen a make in a 12-month almost a dozen times as great.

Mr. Swank will perhaps be remembered chiefly for his statistics, and no wonder when he has gathered them for double the length of the ordinary business generation and has placed American iron and steel statistics in point of fullness and accuracy pre-eminent among the statistics of the iron making countries, but he should be remembered as the historian and as by far the most powerful friend the iron and steel protective tariff has ever had, for he became a statistician because he wished to advocate that policy. With him the statistics were a means to an end.

Mr. Swank has remained in full charge of the association's work for 12 years longer than he desired. In the annual statistical report for 1899, presented in May, 1900, he said: "This is the last annual report that I will prepare. The next annual report must be prepared by another hand." At the same time he urged in letters to individual members of the association that an assistant be provided whereby he might be relieved of the responsibility. The 1899 report was presented to Hon. B. F. Jones, as president of the association, Mr. Jones died May 19, 1903, and was succeeded by the senior vice president, Joseph Wharton, to whom Mr. Swank formally addressed a letter of resignation under date of Dec. 31, 1908, but Mr. Wharton died on Jan. 11 following, and no action was taken. He was succeeded by the only surviving vice president, William Metcalf, who died Dec. 5, 1909. When Mr. Swank was made secretary at the beginning of 1873, there was an executive committee of 12 members, but years ago the committee disappeared through the death of its various members, no successors being appointed. It has accordingly simply rested with Mr. Swank to urge the American Iron and Steel Institute to take over the work and relieve him from a burden from which he has long desired to be relieved upon condition, such has been his steadfast devotion, that the work could be continued as conscientiously and carefully as has been the case throughout his own 40 years of service.

It is no light burden which will thus be transferred to the new institute at the close of this year. The work of gathering the production statistics of the American iron and steel industry, passing in tonnage that of the next two nations combined, with wonderful ramifications and complexities, requires knowledge, skill and care of the very highest order. However complete the system of compilation, the work cannot lack a guiding and responsible hand for a single day. It is not routine work, but constructive work requiring consummate ability.

A Strong Man Confronts Lawlessness and Its Sympathizers

Business men are not in the habit of looking to the base ball world for tips on how to meet emergencies, but we believe the recent attitude of President Ban Johnson, of the American League, is worthy of hearty commendation.

The conduct of Cobb in disregarding the law of the state and the rules of the game in leaving the field and making an assault upon a by-stander contained the very essence of anarchy. Whether the cripple in the crowd used foul language or not, it

did not justify Cobb. It was his duty to depend upon the city and base ball officials properly to punish the offender. He certainly had no right to take the law into his own hands. Mr. Johnson witnessed the incident and promptly suspended Cobb. This is done almost daily, when offenses of a much less serious character are committed by ball players. Mr. Johnson had not finally passed on the case and the players had no means of knowing whether the penalty which he would inflict would be unduly severe or not. They decided, however, to inaugurate a sympathetic strike, and they refused to play at the next game.

The manager of the Detroit team was evidently in sympathy with the strikers and did not take a firm stand against their unjustifiable conduct. The situation was indeed a grave one, threatening the very life of at least one great league. The whole country was looking to see what Ban Johnson would do. Would he temporize, would he yield, or would he deal with the men firmly and courageously? Johnson was prompt in showing that he was a strong man with the nerve to meet a trying situation. He told the men to go back to work. He declared that no consideration would be given the Cobb case until they did return to work. There was no promise of leniency toward Cobb or any other player. The ultimatum was positive. Every "fan" in the country, from the smallest urchin up to the veteran base ball enthusiast, and also many who have ordinarily little interest in the game, wondered what the players would do. Of course, they yielded, as men are bound to do when they are in the wrong, public sentiment is against them and they are confronted by a strong man.

In striking contrast with the unflinching opposition of Ban Johnson to the incipient anarchy and the sympathetic strike, was the action of senators and members of the National House from Georgia. These alleged statesmen, instead of standing up for law and order, sent a telegram to Cobb, commending him for committing an assault. Proud indeed these law makers ought to be of themselves for commending the lawlessness of a man who happened also to be a native of Georgia! Then came the Alabama Federation of Labor, which in convention assembled at Anniston a few days ago, adopted a sweeping resolution commending the stand of the Detroit base ball club and that of Tyrus Cobb.

When in spite of the fact that some law makers and labor conventions stand together in commending lawlessness, the president of a base ball league appears as the champion of law and order, he raises base ball to a higher level than it has ever before occupied and makes it more worthy than ever before of the name, "The American Game".

Elbert H. Gary—A Type for the White House of the Future

The recent address of Judge Gary at the meeting of the American Iron and Steel Institute in New York was strong, vigorous and just and it admirably reflects the characteristics of that great man.

Early in his address, Judge Gary spoke of the important welfare work which has been inaugurated by the Institute. Probably no part of his many duties is so near his heart. In bettering the conditions of its employes, the Steel Corporation has made an admirable record, and under the guidance of such men as Judge Gary and Dr. Darlington, the Institute will render service of the highest grade in making life happier for many thousands of employes.

Judge Gary's remarks, in regard to the meetings in Europe last summer, show that in spite of the fact that the results were lacking in definiteness, they were, nevertheless, valuable. It may be a long time before the Gary idea of bringing the manufacturers of all great iron producing countries of the world into harmonious and co-operative relations will be carried out fully, just as it may be a long time before the nations agree to international peace in military affairs, but the one is no more a hopeless dream than is the other. At any rate, it is not a crime to be a dreamer.

In discussing the price maintenance movement in which Judge Gary was the leader, and in referring to the attitude of the government in industrial affairs, the speaker advanced his well-known and broad-minded ideas. After a period in which many companies have been carrying on their business at a loss, Judge Gary brought a message of cheerfulness and optimism, and then he registered his protest, as he has so often done before, against destructive competition, which he said means bitter, relentless, over-bearing, tyranical conduct calculated to drive out the weak and allow only the strong to survive. Although stating plainly his opinion that he believes that men have a right to co-operate so as to obliterate the cruelties of business, he declared, "I have no spirit of defiance." He might well had added that he was defiant of nothing except injustice. "I hope," said he, "you will keep up your courage and stick by your property and devote your time and energies more particularly to preserving your business, until by some kind of government recognition, if not government regulation, you may be allowed to proceed on lines which will permit you to work together, to co-operate and to build up your business and your interests in the future as you have in the past."

Finally Judge Gary spoke of the rights of the public. "I hope," said he, "we shall never be disposed to defy or ignore the public interest or public criticisms. On the contrary, I hope we shall endeavor to profit by everything that may be said concerning us and concerning our affairs. I trust the members of the Institute may get and keep above and beyond the mere question of making money for ourselves; that as citizens of this great republic we may occupy a position and advocate principles which will advance the best interests of the country." Few men who have been maligned as has Judge Gary would speak such words as these. In truth, the absence of bitterness in this address is one of its most striking features. There was not even a harsh word, not even a caustic remark about anyone who has been guilty of unjust criticism of any great business.

Fortunate indeed is it, not only for the iron business, but for all lines of business and for the country, that at the head of a mighty industry and of the American Iron and Steel Institute is a man of the breadth of view, courage, considerateness and statesmanlike qualities of Elbert H. Gary. Some day—perhaps not as far in the future as now seems probable—the people of this country will fully realize that they need real statesmanship and genuine leadership in the chief executive of the nation. They will realize that the country demands the biggest, brainiest man it can find, no matter whether he be in the service of a corporation or not. When that day comes, the country will be fortunate if it has the opportunity to place in the White House a man of the type of Elbert H. Gary.

NON-BESSEMER ORE

Will Probably be Principal Product of the Cuyuna Range.

By Kirby Thomas

The Cuyuna iron district of Minnesota now has two shipping mines, the Kennedy and the Armour, and several other properties will soon follow, so that the output from this new district will be a considerable factor in the iron ore supply from now on. Data concerning the grade of the ore are of interest and are now available from the records of the several developed mines and from the data of more than 2,000 drill holes for exploration and testing. Most of the ore so far developed in the Cuyuna district is non-Bessemer in character and there is little reason to expect that the district will become an important contributor to the Bessemer ore supply, although some ore of this kind has been found on the North range.

The Cuyuna ore is generally a hydrous, silicious limonite with a mixture of hematite and some fairly large bodies of hematite, especially on the North range. But little of the ore developed is over 60 per cent iron and according to a local calculation a determination of all of the ore over 40 per cent iron would show an average of about 45 per cent iron. This is a rough measure of the relatively low grade of the ore. In a calculation of developed tonnage on the North range the proportions in the actual tonnage were as follows:

45 to 49 per cent inclusive "natural".....24,000,000 tons
50 to 54 per cent, inclusive, "natural".....18,000,000 tons
55 per cent and over, "natural" .....16,000,000 tons
Total over 55 per cent, "natural" .....34,000,000 tons

The North range of the district has a greater tonnage of ore averaging over 50 per cent than the South range.

The commercial minimum in the district is accepted at 51.50 per cent iron for the non-Bessemer standard. Much of the ore above 45 per cent and below the standard can be utilized in operation by mixing with grades above the minimum. How much of this below standard ore will be available in this way depends on mining conditions to a large extent. Another calculation bearing on the ore grade is available. On the basis of the development up to the present year, an estimate of the average iron content of the developed ore analyzing over 50 per cent iron natural shows an average iron content of about 53 per cent. The moisture factor is about 10 per cent.

Some magnetite is found in the ore bodies, but this is small in amount. The magnetite-bearing schists which accompany the ore body extensively are not now of commercial interest.

The highest grade ore has been found generally nearest the erosion surface and the iron content decreases with depth, the limit of commercial ore being about 200 feet on the South range and from 300 to 450 feet on the North range. The deepest ore disclosed so far is 850 feet. These depths are, of course, based from the erosion surface, not the actual surface, of the gravel overburden, which is anywhere from 50 to 150 feet deep. In depth the ore grades abruptly into iron carbonate and other ferruginous material the evident primary source of the ore bodies.

The phosphorus content is estimated to average about 0.30 per cent, although it varies from 0.04 per cent to 0.60 per cent or more.

Notwithstanding the intimate relation of the slate to the ore bodies, the ore is relatively low in alumina and does not average above the iron ores of the other Lake Superior districts.

Considerable silica is found in all of the ore, the silica content having a constant inverse relation to the iron grade.

The moisture content of the Cuyuna ores varies from 6 to 14 per cent. An average moisture standard is 10 per cent. This relatively high moisture content is perhaps due to the structural relations of the ore bodies forming reservoirs so that the ore is physically saturated in the ground. With the development of underground mining and the consequent drainage of the ore bodies, this moisture content will probably be materially reduced.

Portions of the Cuyuna ore beds are highly manganiferous, yielding up to 25 per cent manganese and averaging in large bodies 15 per cent. The marketing of this product is engaging the interest of some of the operators. Under the present trade conditions, there is practically no demand for this manganiferous iron ore.

The Cuyuna ores, though sometimes soft and earthy, are generally hard and porous and the range is granted in the iron trade a classification as "old range" on account of this physical structure which gives it a preferential price of 20 cents a ton over the Mesabi ores.

It is altogether likely that under special conditions commercial bodies of high grade ore, possibly of Bessemer grade, will be disclosed in the district as development proceeds, but the data now available indicate that the Cuyuna will be marked as an important source of relatively low grade non-Bessemer ore.

Texas Company Buys Rails and Track Fastenings

The National Iron & Steel Co., Houston, Tex., through its vice president and general manager, I. H. Cohn, recently purchased from the Missouri Pacific railroad 150 miles of relaying rails, most of which are being shipped into the southwestern territory, to be used in the construction of small lines and industrial tracks and interurbans.

This company has also placed with eastern mills in the last 30 days orders for 20,000 kegs of new track spikes and several thousand kegs of track bolts; also 75,000 pairs of new angle bars. It is understood that this business went to the Jones & Laughlin Steel Co., Pittsburgh; Republic Iron & Steel Co., Youngstown, and the Lebanon mills at Lebanon, Pa. An additional order for 5,000 kegs of spikes went to the Colorado Fuel & Iron Co., at Denver.

Companies Combine

The Duncan Forge Co. and the Vulcan Iron Works Co. have effected a consolidation and hereafter their business will be conducted in the plant of the Duncan Forge Co., 510-522 Water street, Toledo. A number of departments will be added and in the future steam shovels and dredges will be repaired; beside, it will handle various classes of heavy and light forging and marine repairs. The Duncan Forge Co. recently purchased and added to its holdings the north section of the building which it occupies. It controls 500 feet of dock frontage and is in possession of more than 500 feet of frontage on Water street. Directors of the consolidated company will be elected early next week. F. A. Duncan will be president and general manager and J. B. Webber Jr., will be general superintendent.

The Warner Instrument Co., Beloit, Wis., manufacturer of automobile and other speed indicators, is adding to the capacity of its shops in South Beloit. It is said the extensions will afford three times the capacity of the present plant.

Iron and Steel Securities

The price movement on the New York stock exchange was uninteresting last week. The advances were offset by declines and incentives to definite changes in the market were lacking. The Roosevelt victory in Ohio sent stocks down Wednesday morning, but the decline lasted only a few hours.

Monday, the market opened firm and higher on the settlement of the anthracite wage scale, but closed heavy on uncertainties connected with the Ohio primary election. Copper metal advanced to 16⅝ cents, a new high price for the year. Tuesday was an extremely dull day on the exchange. Wednesday, stocks opened weak as a result of the Ohio election and suffered a sharp decline, but subsequently recovered. Money market easy. Thursday, stock market again dull with a few specialties advancing. Call loan rates declined. Friday was the dullest day of the week on the exchange, with the price movement very irregular. Foreign markets disturbed by fresh labor troubles in England. Saturday stocks were again dull, with no price change in the regular list.

Money on call ranged between 3 and 2¼ per cent. Time money was dull, the supply being abundant, but the demand very light. The actual condition of clearing house institutions showed loans increased $5,883,000; net deposits increased $11,621,000; total reserve $452,181,000, and the excess of reserve $26,456,150, an increase of $5,553,650. Non-member banks and trust companies showed loans increased $1,394,300; net deposits increased $3,991,300; reserve on deposits increased $552,400, and the percentage of reserve 19.1, against 19 the week previous. Bank clearings showed a decrease of 9.8 per cent from the preceding week and an increase of 10.1 per cent over the corresponding week last year. Commercial failures numbered 241, compared with 308 the preceding week and 240 the corresponding week last year. Shares were sold to the number of 2,247,780, compared with 3,664,017 the preceding week and 2,529,950 the corresponding week a year ago. Bonds, exclusive of government bonds, were sold to the amount of $12,374,000, compared with $15,120,000 the preceding week and $15,390,000 the corresponding week a year ago.

	Clos'g Quo. May 25	Changes in week.	Annual Meeting date 1912	Stock Outstanding	Basis.	Dividend Last Dividend	Dividend Date Last Div. Pay
Allis-Chalmers	1	.....		$19,820,000		.....	
Allis-Chalmers, pr.	4¼	+ ¼		16,050,300	7 cum.	1¾ Q.	Feb., 1904
American Can	39¾	+ ¾	Feb. 6	41,233,300		.....	
American Can, pr.	117½	+ ½		41,233,300	7 cum.	1¾ Q.	Apr., 1912
Am. Car & Fdy.	59	.....	June 27	30,000,000	2	½ Q.	Apr., 1912
Am. Car & Fdy., pr.	120	+1⅜		30,300,000	7 n. c.	1¾ Q.	Apr., 1912
American Loc.	42½	— ½	Oct. 15	25.000.000	5	1¼ Q.	Aug., 1908
American Loc., pr.	108	.....		25,000.000	7 cum.	1¾ Q.	Apr., 1912
American Ship.	50⅞	.....	Oct. 9	7,600,000	4	2 Q.**	June, 1911
American Ship, pr.	101	.....		7.900,300	7 n. c.	1¾ Q.	Apr., 1912
Am. Steel Foundries	37¼	— ¼	Mar. 21	17,184,000	5	1¼ Q.	May, 1911
Barney & Smith	10	.....	June 4	2,000,000	4	1 Q.	Dec., 1907
Barney & Smith, pr.	85	.....		2,500,000	8 cum.	2 Q.	Dec., 1911
Bethlehem Steel	38	— ¾	April 2	14,862 000		.....	
Bethlehem Steel, pr.	71⅞	+ ⅝		14,908,300	7 n. c.	¾ Q.	Feb., 1907
Cambria Steel	43¼	— ¼	Mar. 19	45,000,000*	5	1¼ Q.	May, 1912
Cambria Iron	43	— ½		8,468.000*	4	2 S. A.	Apr., 1912
Chicago Pneumatic Tool	48	—1½	Feb. 19	6,448,800	4	1 Q.	Apr., 1912
Colorado Fuel	28¾	— ¼	Oct. 21	34,235,500		1¼ Q.	Apr., 1902
Crucible Steel	12¼	.....	Nov. 15	24,578,400		.....	
Crucible Steel, pr.	83¾	+ ¼		25.000.000	7 cum	1¾ Q.	Mar., 1912
Empire Steel	10	.....	Feb. 28	1,254,770		.....	
Empire Steel, pr.	45	.....		2,500,000	6 cum.	2 S. A.	July, 1911
Fay & Egan	75	.....	Feb. 20	1.000,000	7	1¾ Q.	Nov., 1908
Fay & Egan. pr.	115	.....		1,000,000	7 cum.	1¾ Q.	May, 1912
General Electric	171	+ ½	May 14	77,281,200	8	2 Q.	July, 1912
Harbison-Walker	39	.....	Jan. 15	18,000,000	2	½ Q.	Mar., 1912
Harbison-Walker, pr.	100	+1		9,600.000	6 cum.	1½ Q.	Apr., 1912
International Pump	29	—1	Dec. 13	17,762,500		½ Q.	Apr., 1905
International Pump, pr.	81	— ½		11,350,300	6 cum.	1½ Q.	May, 1912
Lackawanna Steel	29	.....	Mar. 13	34,978.000		.....	
Lake Sup. Corp.	28½	.....	Oct. 2	40,000,000		.....	
New York Air Brake	56	+3	Mar. 13	10,000,000	6	1½ Q.	July, 1911
Niles-Bement-Pond	95	.....	Feb. 7	8,500,300	6	1½ Q.	June, 1912
Niles-Bement-Pond, pr.	101	.....		2 000,000	6 cum.	1½ Q.	May, 1912
Otis-Elevator Co.	75	+1	Mar. 18	6,358,600	4	1 Q.	Apr., 1912
Otis Elevator Co., pr.	101	.....		6,375,300	6 n. c.	1½ Q.	Apr., 1912
Pa. Steel	60	.....	May 13	10.750,000		.....	
Pa. Steel, pr.	100	.....		20,587,500	7 n. c.	3½ S. A.	May. 1912
Pittsburgh Coal	23¼	+2	Mar. 12	28,104,600		.....	
Pittsburgh Coal, pr.	91½	+3		27,071,800	7 cum.	1¾ Q.	Apr., 1912
Pittsburgh Steel Co., pr.	102½	.....	Oct. 7	7,000 000	7 cum.	1¾ Q.	June, 1912
Pressed Steel Car.	35¼	+¼	Feb. 21	12,500,000		1 Q.	Aug., 1904
Pressed Steel Car, pr.	101¾	— ½		12,500,000	7 n. c.	1¾ Q.	May, 1912
Pullman	160	— ½	Nov. 13	120,000.000	8	2 Q.	May, 1912
Railway Stl. Spring	34⅝	+ ⅛	Mar. 7	13,500,000	2	1 S. A.	Oct., 1908
Railway Stl. Spring, pr.	100⅝	.....		13,500,000	7 cum.	1¾ Q.	Mar., 1912
Rep. Iron & Steel	23¼	— ⅛	Oct. 16	27,191,300		.....	
Rep. Iron & Steel, pr.	78½	—1½		25 000.000	7 cum.	1¾ Q.	Jan., 1912
Sloss-Sheffield	50	—1	Mar. 13	10,000,000	5	1¾ Q.	Sept., 1910
Sloss-Sheffield, pr.	100	.....		6,700.000	7 n. c.	1¾ Q.	Apr., 1912
U. S. Pipe & Fdy. Co.	21	— ¾	June 26	12 500,300		1 Q.	Dec., 1907
U. S. Pipe & Fdy. Co., pr.	56	+ ½		12,500,000		1¼ Q.	June, 1911
U. S. Steel	69¾	—1⅛	April 15	508,302,500	5	1¼ Q.	June, 1912
U. S. Steel, pr.	110⅞	— ½		360,281,100	7 cum.	1¾ Q.	May, 1912
U. S. Steel 5s	102	— ¼		465.189.500	5	5 Q.‡	
Va. Iron. Coal & Coke	61	— ½	Sept. 17	9.073.680		.....	Oct., 1907
Westinghouse Air Brake	171	+1	Oct. 1	14,000,000*		5. †	Apr., 1912
Westinghouse Electric	74	—1	June 12	3,998 700*	7 cum.	1¾ Q.	Apr., 1912

Par value of shares, $100, except those starred (*), $50.
**Includes last 1 per cent payment of 4 per cent extra.
†Stock.
‡Include 2½ regular, 1½ extra and 1 special.

Copper Stocks

New York.—Amalgamated Copper closed 83¼, a net loss of ⅞.

Boston.—Anaconda closed 42½, a net gain of ¼; Calumet & Arizona closed 72⅛, a net loss of ⅛; Calumet & Hecla closed 488, a net gain of 3; North Butte Mining closed 29, a net gain of ⅛; Quincy Mining closed 90½, a net gain of ⅝.

Financial Notes

The International Harvester Co. has declared the usual quarterly dividend of 1¾ per cent on its common stock, payable July 15.

The General Electric Co. has declared the regular quarterly dividend of 2 per cent, payable July 15 to holders of record June 1.

The Underwood Typewriter Co. has declared the regular quarterly dividends of 1 per cent on common and 1¾ per cent on preferred stock, payable July 1.

The Niles-Bement-Pond Co. has declared the regular quarterly dividends of 1½ per cent on the common and 1½ per cent on the preferred stocks. The common dividend is payable June 20 to stock of record June 12. The preferred dividend was payable May 15 to stock of record May 10.

Admits He is Making Ordnance for Government

Witty Scot Enlivens Hearings in Corporation Case

Tells Why Frank Baackes Was Not Kicked Down Stairs—Mr. Perin Tells What Welfare Work Costs—Interesting Facts About Structural Business

In the Steel Corporation trial, the government continues to pursue its line of attack by endeavoring to show that the present various subsidiary companies were originally organized to restrain competition and were engaged in illegal practices before being consolidated under one head. The federal side seeks to prove that by continued adoption and by influence, these alleged illegal acts have remained in effect to the present time.

The witnesses who appeared on the stand on Wednesday, Thursday and Friday were Percival Roberts Jr., president of the American Bridge Co. before it was taken into the Steel Corporation; C. D. Marshall, president of the McClintic-Marshall Construction Co., of Pittsburgh; Charles Page Perin, an iron ore and coal land expert, and John Stevenson Jr., who organized the New Castle Wire Nail Co., the Shenango Valley Steel Co., the Shenango Valley Tin Plate Co., the Sharon Steel Co., the Sharon Tin Plate Co. and a number of other companies. Mr. Stevenson's testimony was most interesting and related to his various ventures in the iron and steel and tin plate industries and the nature of the transactions by which he sold out his various properties to the Consolidated Steel & Wire Co., to the National Steel Co., to the American Tin Plate Co. and later to the United States Steel Corporation. He described the competition which prevailed during the years preceding the formation of the Corporation, when "the mortality was 80 per cent," and also that which ruled in the market subsequent to that event. He termed the Corporation a "good" competitor.

Mr. Perin gave testimony regarding the extent of the iron ore and coal properties of the Tennessee Coal, Iron & Railroad Co. He also described the immense ore deposits of Cuba and Brazil and other districts tending to show that it was impossible to monopolize the ore in this hemisphere. Mr. Perin said that the loose methods of keeping cost sheets in the south show the cost of pig iron appear less than it really is. He further stated that the advent of the Steel Corporation has been "a very great blessing to the district and also to the entire iron industry."

With the coming of a few hot days last week, the scene of the hearings was shifted Wednesday to room 720, in the Custom House, New York City. The new room, besides being cooler, is more satisfactory in every way. It looks directly out on Bowling Green, and the hearings may thus be held in comparative quiet instead of in the noisy uproar which filtered through the windows facing Broadway.

It now appears that the hearings will end temporarily in New York City during the first week in June, to be resumed in Pittsburgh after a recess of two weeks.

Sharp Flashes of Wit and Humor

John Stevenson Jr., of Sharon, Pa., every inch a Scot, in his canny speech and in the sharpness of his wit did much to break up the monotony of the ceaseless flow of questions and answers. During his testimony on Thursday, Mr. Stevenson related how, while still a boy, in Scotland, he had witnessed Sir Henry Bessemer run off his first heat.

"And a pretty mess he made of it, too. It was mostly fun for us boys, with the sparks shooting out like a display of fireworks," said Mr. Stevenson.

"Did you see him finally succeed?" asked R. V. Lindabury, of the Corporation counsel.

"He didn't succeed right away. You see, he was a lawyer. He later went to Sweden, however, where the metal was of a better quality, and there he was very successful."

"So," said Mr. Lindabury, "he started in by making a mess of things and ended by making steel successfully. Isn't that the way for a lawyer to do?"

"Steal successfully you mean?" inquired the witness innocently enough.

This ended the attempt of the counsel to derive amusement at Mr. Stevenson's expense.

Beating the Wire Nail Pool

Mr. Stevenson described a meeting of the wire nail pool, held at a Cleveland hotel in the nineties, at which the late John W. Gates, Frank Baackes and others prominent in the industry were present. The manufacturers agreed to maintain the price of wire nails at $1.50 a keg and then adjourned for lunch.

"Mr. Baackes went right down to the telegraph office and closed an order with a large consumer for 10,000 kegs at $1.40," said Mr. Stevenson. "I found out about it because I went to the telegraph office right after him. I was going to send a telegram, too." The witness joined in the laugh that followed, and explained he was merely going to notify his business associates of the action taken.

"So I handed in my telegram," continued Mr. Stevenson, "and the girl later handed out Frank Baackes' telegram, thinking it was mine, and asked

me if it was correct. I told her I had changed my mind and wouldn't send it. So I put it in my pocket and when the meeting reconvened after luncheon, I read it and asked what should be done with Baackes. Stewart Chisholm, the chairman said, "Kick him down stairs and I'll pay the fine."

"Was that Frank Baackes, of the American Steel & Wire Co.?" interrupted Mr. Lindabury.

"Yes, otherwise he is a very decent fellow, too."

"What did you do about it?"

"Well, I didn't do anything. Baackes is bigger than I am," said Mr. Stevenson.

Later Mr. Stevenson was questioned about the competition of the Steel Corporation in 1901, 1902 and 1903. The Corporation, the witness admitted, was a fair competitor of the "good" kind.

"Did Frank Baackes or any of the others practice the methods of which you have given an example?" asked Mr. Lindabury.

"No, Baackes had gotten religion by that time," replied the witness.

Made Nails and Money

At another time, Mr. Stevenson was asked by Attorney H. E. Colton about the affairs of the New Castle Wire Nail Co., which the former founded.

"What were its products?"

"Wire and nails," answered Mr. Stevenson, apparently surprised at the question.

"Well, what else did you make?" pursued Mr. Colton.

"We made a little money," replied the witness.

"Woolen Mills or Churches?"

On another occasion, Mr. Colton put several questions, which seemed to startle the witness.

"What is fence wire used for?" he asked.

"Why, the farmers usually make fences with it."

"If a man wanted plain wire and you found you could sell him barbed wire cheaper, would he take barbed wire?" was the substance of another of Mr. Colton's questions.

"Well, Mr. Attorney, suppose you wanted to buy a church; would you take a woolen mill?" replied the witness with some show of sarcasm.

Furnishing Government Ammunition

Mr. Stevenson, for the past several years, has been engaged in the manufacture of motor trucks and steel automobile frames.

"What did you do before that?" asked Mr. Lindabury.

"I made ordnance for the government," replied Mr. Stevenson.

"That's what you are doing now, isn't it?" pursued Mr. Lindabury, and the witness, with a smile, agreed he was. This thrust seemed to pass entirely over the heads of Judge Dickinson and H. E. Colton, the government counsel.

Kept Out of Trouble

At one time in his testimony, Mr. Stevenson related how, after selling out several of the mills in which he was interested, he went to Europe for a vacation. After he came back, he thought it best to get into business and "keep out of mischief". "Several of the boys had gone to New York and gotten into trouble. One of my partners had married a chorus girl there," he said. So he acquired an interest in the Sharon Steel Co. and other companies, to "shake the apple tree again", as he put it.

"So you went to Europe, having finished the shaking of the apple tree?" inquired Mr. Lindabury later.

"Well, I had finished, pro tem," rejoined Mr. Stevenson.

Marshall, Stevenson and Others Testify

Percival Roberts Jr., who had been examined on Tuesday of last week, was permitted to take the stand on Wednesday morning in order that he might correct a statement he had made relative to the percentage of the country's capacity controlled by the American Bridge Co. He stated that the figure 38 which he had previously given, represented the bridge company's percentage for the year 1903.

Mr. Marshall Testifies

C. D. Marshall, president of the McClintic-Marshall Construction Co., Pittsburgh, testified that before the organization of his company he was connected with the Shiffler Bridge Co., Pittsburgh, which was taken over by the American Bridge Co. Mr. Marshall was asked which companies among those taken over by the American Bridge Co. he regarded the largest. He mentioned the Pencoyd Iron Works, the Keystone Bridge Works, the Lassig Bridge & Iron Works and the Edgemoore Bridge Works. These, he said, he always regarded as having been larger than any other concerns in the country, either in or out of the American Bridge Co. Mr. Marshall then submitted testimony descriptive of the products, the markets and the lines of activity engaged in in 1900, so far as he knew, by the various companies which were later taken into the American Bridge Co. A list of about 300 names of various concerns was read by Judge Dickinson from a directory of the American Iron and Steel Association.

Mr. Marshall stated that in his opinion the American Bridge Co. absorbed about 75 per cent of the capacity for competitive business in the country at the time of its organization in 1900. He stated that his company had taken contracts from the American Tin Plate Co. and the Carnegie Steel Co. prior to the formation of the Steel Corporation. Since the latter event it has received no contracts from the Corporation subsidiaries. These all go to the American Bridge Co., said Mr. Marshall.

"What per cent of the country's business does the American Bridge Co. now do?" asked Judge Dickinson.

"The Bridge company last year contracted for about 70 per cent of the business," answered the witness. He stated this was an answer based on his general knowledge of the trade and not on any actual statistics.

Mr. Marshall stated that the McClintic-Marshall Construction Co. was incorporated in March, 1900. He explained that shortly thereafter the capitalization was increased to $300,000. It is now $5,000,000. Of this $3,500,000 has so far been issued. The output for 1900 was 18,000 tons. For 1902 and the years thereafter it was 52,000, 58,000, 45,000, 67,000, 111,000, 111,000, 80,000, 97,000, 133,000 and 101,000 tons respectively. This line of testimony was designed to show that competition with the American Bridge Co. has not injured the McClintic-Marshall company.

Didn't Check Buying

"Did the fact that many of the directors of the Pennsylvania, New York Central and other railroads are also directors of the Steel Corporation ever prevent you from getting contracts from these railroads?"

"No," said Mr. Marshall. The witness further testified that so far as he knew the American Bridge Co. was never a member of any association which regulated prices, or of the Bridge Builders' Society.

Mr. Marshall was asked as to the growth of various concerns in the last 12 years. The McClintic-Marshall company and the Pennsylvania Steel Co. have grown constantly, while the Riter-Conley Mfg. Co. increased in capacity constantly until the death of Mr. Riter. The Phoenix Bridge Works and the King Bridge Co., Mr. Marshall believed, have not increased materially in capacity.

Mr. Marshall was asked to explain the statement in which he had said that the American Bridge Co., according to his belief, had taken 70 per cent of the business of the country last year. The witness stated that this referred to that class of business for which the American Bridge Co. was a competitor with other companies.

"When you stated this morning that the American Bridge Co. had absorbed 75 per cent of the output of this class of business in the country, did you take into consideration all structural fabricators or only such as you met as competitors?"

"Only such as I met as competitors," answered Mr. Marshall. He further stated that he had not considered the smaller companies. A company would only be considered a competitor, he said, if it had an annual capacity of 10,000 tons or more.

"Has the American Bridge Co. as large a per cent of the total output at present as it had in 1900?"

"Pretty near it," said Mr. Marshall.

Charles Page Perin, of New York, stated that he was a member of a commission appointed in 1904 for the purpose of determining the extent of the coal and iron ore properties of the Sloss-Sheffield Steel & Iron Co., the Republic Iron & Steel Co. and the Tennessee Coal, Iron & Railroad Co. T. H. Aldrich was chairman of this commission, and it also included J. W. Worthington and others. The investigation was held for the purpose of determining the relative amounts held by these three companies and it was found that the Tennessee company's ore reserve approximated 412,000,000 tons. This included 198,000,000 tons of red ore in the Birmingham district, and also brown ore outside of that district, but all within a radius of 25 miles from Birmingham. That company also owned some ore in Georgia. Mr. Perin stated that the company owned deposits of limestone and coal within the same distance from Birmingham. The proportion of red iron ore in the Birmingham district owned by the Tennessee company in 1904 was 70 per cent. Mr. Perin was not sure just what the Tennessee company owned in 1907, but he said he had no reason to believe that it has made any changes in the extent of its properties.

Asked as to the cost of producing pig iron in the south, Mr. Perin stated that it was about $4 per ton less, in 1907, than it was in the Pittsburgh district. He stated that he was sure of this since he had seen the cost sheets of several independent furnace companies in and around Pittsburgh. Had the equipment in the south been like that in the Pittsburgh district, he felt sure the spread would have been still greater in favor of Birmingham.

Mr. Perin was again called Thursday morning to give further testimony regarding the ore and coal lands of the Tennessee Coal, Iron & Railroad Co. He stated that he was called upon sometime in 1906 to make a report to Leonard C. Hanna, of Cleveland, concerning these properties. This was just after the Schley syndicate had purchased the Tennessee company. The purpose of this second investigation was to determine what improvements should be made and what portions of the reserves should be developed.

Mr. Perin stated that the practice in the south at present is to use 1.25 tons of coke in producing a ton of pig iron; in 1906 it was one ton of iron to 1.6 or 1.7 tons of coke. He was of the opinion that if cost sheets in the south were kept as rigidly as they are in Pittsburgh and other northern districts the cost of producing pig iron would be found to be much greater than is actually apparent. Fully 50 per cent of the southern iron is brought north, in spite of a high freight rate.

No Others Could Do It

The witness described several large iron ore deposits, notably the Moa Bay Iron Co.'s property on the north coast of Cuba. This contains 1,500,000,000 tons of rich ore which is located within three miles of an excellent harbor. It may be loaded aboard cars at 5 cents per ton while the cost of delivering it to Atlantic coast points, loaded in cars, is about 85 cents per ton. He also mentioned the deposits in Brazil which embrace 2,500,000,000 tons of ore, containing on an average, 69 per cent of iron. This ore is extremely low in phos-

Gives Interesting Statistics of Fabricated Steel Trade

Percival C. Roberts Jr., former president of the American Bridge Co. and at present a director and member of the finance committee of the American Bridge Co., submitted in evidence Friday some interesting statistics surrounding the fabricated steel industry. He presented a table covering the tonnage of fabricated work, both domestic and export, bid upon by the American Bridge Co. and the quantity of contracts taken by that company, covering the period from 1902 to 1911. These statistics, given in net tons, were taken from the compilation regularly made by the American Bridge Co. from the reports of its various district representatives. The tabulation follows:

	Work Bid Upon.		Work Taken.
	Domestic.	Export.	Domestic
1902	1,222,484	52,414	491,060
1903	.....	.....	.....
1904	989,160	12,982	388,770
1905	1,285,767	48,243	609,232
1906	1,181,087	46,933	498,404
1907	1,084,916	53,699	405,463
1908	970,347	24,599	224,771
1909	1,634,678	34,431	577,561
1910	1,293,004	35,908	366,454

In 1910, the witness said, the American Bridge Co. took 29.8 per cent of the work it bid upon. In some years, the percentage ran as low as 27 and 28 and it never exceeded 50 per cent.

Mr. Roberts estimated that the present fabricated steel capacity of the United States was 2,489,000 net tons representing 750,000 tons of the American Bridge Co. and 1,739,000 tons of the independents.

phorus. The Steel Corporation's ore holdings in Cuba, the witness testified, amounted to about 50,000,000 tons. Both the Pennsylvania and Eastern Steel companies hold much larger Cuban reserves. The Corporation's holdings in Cuba are rather far inland, said Mr. Perin, and he was of the opinion that the cost of developing them would be very high. This line of testimony was designed to show that it was an impossibility to obtain a monopoly of the iron ore in this hemisphere.

In reference to the examination of the Tennessee company's properties in 1906 by a commission of which Mr. Perin was a member, the latter stated that that commission had advocated, in addition to what had already been invested, an expenditure of $20,000,000 to completely rehabilitate the company's properties. Since the Steel Corporation took over the property, the witness said, great improvements have been made, and he knew many millions of dollars had been spent. The cost of production has been greatly reduced. Mr. Perin also stated that wages are uniformly higher, conditions of labor are better, while the welfare work which the Tennessee company finances probably consumes the annual interest on $3,000,000. Mr. Perin characterized the Steel Corporation's advent in the south as "a very great blessing to the district and also to the entire iron industry."

In re-direct examination by Judge Dickinson, Mr. Perin stated that no other organization outside the United States Steel Corporation could afford to make the expenditures which have been made for improvement to the Tennessee company's plants since 1907. He estimated the Corporation would expend $25,000,000 before it will have carried out its program.

Successful Scot Testifies

John Stevenson Jr., of Sharon, Pa., was the next witness to take the stand. Mr. Stevenson was born in Scotland 64 years ago, but early came to this country and carved out for himself a remarkable career in the iron and steel industry. His first position was with Mackintosh, Hemphill & Co., Pittsburgh. Later, he became assistant engineer in charge of construction of the Edgar Thomson works of the Carnegie Steel Co. In 1884, he went to New Castle and in rapid succession organized the New Castle Wire Nail Co., the New Castle Sheet & Tin Plate Co. and the Shenango Valley Steel Co., the latter having a capacity of 180,000 to 200,000 tons of pig iron and 140,000 tons of Bessemer billets annually.

Judge W. H. Moore first began negotiations for taking over the New Castle Sheet & Tin Plate Co. in 1898, personally calling on Mr. Stevenson in New Castle.

Empowered to Sell Out

"Shortly after," said Mr. Stevenson, "I went to New York and met Judge Moore and Dan Reid; also, I think, W. B. Leeds. I was empowered to sell the plant for $1,000,000."

"How was the payment to be made?"

"Well, there was the rub. Some of our stockholders insisted on having cash and some were satisfied with stock. This was offered at the rate of $100 preferred and $100 common stock of the proposed American Tin Plate Co. for every $100 of the selling price of our company."

"Did you have another tin plate plant at New Castle?" asked Mr. Colton in the afternoon.

"Yes, the Shenango Valley Tin Plate Co. The stock of this company was owned by the Shenango Valley Steel Co.," said Mr. Stevenson. He said that an option was taken by the syndicate, headed by Judge Moore, on both the Shenango Valley Tin Plate Co. and the New Castle Sheet & Tin Plate Co. For the former, $1,500,000 was offered if it was taken over before Oct. 1 of that year; if the negotiations were not then concluded $50,000 was to be added to the price. The same amount was to be added to the value of $1,000,000 set on the New Castle Sheet & Tin Plate Co. in case negotiations were not concluded by Oct. 1. These options were taken in August, 1898. Mr. Stevenson stated that the stockholders were offered either cash or stock of the proposed American Tin Plate Co. The witness stated that he was offered $357,000 in cash for his share of the business or $357,000 in preferred stock and the like amount of common. He chose the latter.

Mr. Stevenson was asked why he sold the New Castle Wire Nail Co. to the Consolidated Steel & Wire Co. in January, 1899.

"Well," said Mr. Stevenson, "there had been 46 companies in the field and the mortality was about 80 per cent as a result of the competition. That was why I sold it."

"Then competition must have been keen?"

"It got worse and worse the longer I was in business." Mr. Stevenson stated that very few of the wire and nail companies in those days had sufficient capital to get along on and first one and then another would go into the hands of a receiver.

After selling out his New Castle interests, Mr. Stevenson visited Europe. He later returned and took over an interest in the Sharon Steel Co. and the Sharon Tin Plate Co. The latter, Mr. Stevenson said, made a contract to sell its entire output to the American Tin Plate Co. for a period of 10 years. The output was limited to 10 per cent of the sales of the American Tin Plate Co. This agreement lasted for only 18 months, however.

"When the Sharon Steel Co. and the Union Steel Co. were merged and sold to the United States Steel Corporation, what was your share?"

"Well, I didn't take any shares. I took bonds."

"A Scotch habit," interjected Mr. Lindabury.

"No, I'd gotten wisdom," said Mr. Stevenson.

Mr. Stevenson said that the Sharon Steel Co. received $13,200,000 in bonds, of which he received half.

Mr. Stevenson stated that the New Castle Sheet & Tin Plate Co. was the second plant to be erected in the country. It had 20 mills, again as many as the only other plant in the country, which was located at Wellsburg, W. Va. He later built another

Word Balked the Hearing

Charles Page Perin, while on the stand the past week was plied with numerous questions concerning the amount of money expended by the Steel Corporation in improving the Tennessee Coal, Iron & Railroad Co.'s properties. Mr. Perin explained that an immense sum must have been invested in this manner. It resulted in the improvement of the various properties and the betterment of conditions for the workmen. "The welfare work alone annually consumes the interest on $3,000,000," said Mr. Perin.

"Do you think that the Corporation is entirely regardless of its own interest in parting with this money?" asked Judge Dickinson.

"I suppose its motives were not entirely eleemosynary," replied Mr. Perin.

The proceedings were here interrupted by the inability of the stenographer to spell "eleemosynary". It was found that of the eminent counsel, the reporters and numerous auditors present, no one could spell the word.

plant at New Castle, with 30 mills, the latter being the Shenango Valley Tin Plate Co. It was the largest plant of its kind in the world at that time.

The witness also told about the trade conditions which prevailed prior to the formation of the Consolidated Steel & Wire Co. As a result of the strenuous competition, there were only 11 companies left and the formation of the Consolidated company reduced this number to seven.

"Mr. Gates frequently used to say that I'd better surrender. So, after a year and a half, I surrenderd and sold out," said the witness, referring to the sale of the New Castle Wire Nail Co.

"Why did you sell out?"

"Because of the poor business."

"Why was the business poor?"

"There were no profits, and there can be no business without profits."

"Did the Shenango Valley Steel Co. ever compete with the Carnegie Steel Co?" asked Mr. Lindabury, when the hearing of Mr. Stevenson was resumed, Friday morning.

"Yes, in billets, also in a smaller degree, in tin bars and sheet bars." Mr. Stevenson stated that the competition extended as far west as Anderson, Ind.

Mr. Stevenson stated that he sold the Shenango Valley Steel Co. to the National Steel Co. two years following the sale of the Shenango Valley Tin Plate Co. and the New Castle Sheet & Tin Plate Co. to the American Tin Plate Co. For the Shenango Valley Steel Co., $3,300,000 stock in the National Steel Co. was obtained. The tube plant at Shelby, O., was sold in the winter of 1897-8. This had been in operation for 1½ years, making 1,000,000 feet of bicycle tubing a month. It was just before the end of the bicycle boom that it was sold.

Sale of Union Steel Co.

At the time the Union and Sharon steel companies were merged, about two years before the formation of the Corporation, said Mr. Stevenson, the Sharon company was well supplied with ore, had one blast furnace and a steel plant, and was building two more blast furnaces. The Union company had little ore and no blast furnaces, although it had completed plans for a furnace.

The sale of the Union Steel Co. in 1903 was brought about by George Darr, president of the Sharon Steel Co., and also a member of the firm of Darr & Moore, brokers. The price paid was obtained by adding the amount of accrued profits of the company to the value of its plant. The ore at Sharon brought a separate price of $5,000,000. Mr. Stevenson stated that this was a very low price and he would not have sold but for the fact that he needed the money. The witness was also questioned about a tube plant which he had built at Sharon. This had been completed and was about to be put in operation when it was purchased by the Steel Corporation, at the same time the Union Steel Co. was purchased. The machinery in it was distributed to the various plants of the National Tube Co.

"Wherein did your strength as a wire manufacturer lie?" asked Mr. Colton.

"In my brain, I suppose," replied the witness, who further stated that it lay also in his control of the process of manufacture from the ore to the finished product. "We used to put ore in the furnace on Saturday night and shipped it out in the form of nails on Friday morning."

Integration Versus Disintegration

During the examination of a witness last week, Mr. Lindabury inquired whether the merger of certain companies might not be regarded as an integrating process.

"What kind of a process?" asked the witness, who couldn't quite get the word.

"An integrating process, the opposite to disintegrating," said Mr. Lindabury. "You see, we build up, that's integration; the government tears down, that's disintegration."

Roberts Again Testifies

Percival Roberts Jr., who appeared earlier in the week, resumed his testimony Friday afternoon. He brought with him a contract drawn up between A. W. Roberts Jr. and P. Roberts and I. Gifford Ladd, arranging for the sale of the secrituies of the A. & P. Roberts Co., Philadelphia, which owned the Pencoyd Iron Works, to the American Bridge Co. Mr. Roberts also submitted a financial statement of the Pencoyd Iron Works, as of Jan. 1, upon which the contract was based. He stated that outside of these contracts he had no part in the counseling of Mr. Ladd or in the negotiations for the taking over of plants which were to go into the American Bridge Co., prior to the time he became president of that company on May 21, 1900.

Asked as to the interviews which Mr. Roberts had with Mr. Ladd, prior to the formation of the American Bridge Co., the witness stated that he had had about five or six such conversations in which the latter discussed a project to form a consolidation of independent bridge companies. It was Mr. Ladd's plan to form this company with a large capital stock so that large contracts could be handled and increased stocks kept on hand; also to effect economy in erection, to specialize the various shops, etc. This occurred during the period from 1898 to 1900. These talks terminated in a proposal by Mr. Ladd for taking over the Pencoyd works.

"What was the percentage of the country's capacity controlled by the American Bridge Co. as far as you know it?" asked Mr. Lindabury.

By the aid of some reports which had been compiled by the assistant auditor of the Bridge company, Mr. Roberts replied that it was about 30 per cent. He added that it had constantly decreased every year.

"What was the American Bridge Co.'s percentage of capacity at the time of its formation?"

"I can only answer in a general way that it was under 40 per cent." Mr. Roberts stated that the percentage of capacity controlled by the American Bridge Co. was 38 per cent in 1904, 36.2 per cent in 1905, 37.4 per cent in 1906, 36 per cent in 1907, 32.2 per cent in 1908, 32.8 per cent in 1909, 31.8 per cent in 1910, and 30.1 per cent in 1911.

The Lawyers and Their Methods

There was excellent reason for changing from the room in the Custom House, where the hearings were held until last Wednesday, because it was in a very noisy place. The room now in use will be much more satisfactory.

H. E. Colton, of the government counsel, is a tall, slender, youthful appearing man who parts his hair in the middle, allowing it to fall slightly over his forehead and temples. He wears spectacles, has the face of a student and is perfectly serious at all times. In the examination of witnesses, he puts his questions in a firm, emphatic manner, but seems to become slightly confused when Mr. Lindabury, of the defense, keeps up a running fire of objections and suggestions as to how the questions should be worded.

Dickinson Bluff Commander

The "heavy" work for the government, however, is done largely by Judge Dickinson. Of weight and stat-

ure far above the ordinary, the judge is a fine figure of a man and one not easily forgotten. Although 61 years old, he does not seem to be past middle age. His hair has thinned but slightly and he wears a mustache which falls down on both sides of his strong, clean-cut lower jaw, thus rather suggesting the "western sheriff" type as portrayed in the moving picture melodrama.

His method of conducting the examination of witnesses is direct and straightforward. He uses no time in the use of polished phrases or long-drawn-out legal verbiage, but comes straight to the point. He is tolerant and never seeks to embarrass the witness on the stand; should the latter adopt a hostile attitude, however, or show unwillingness in answering questions, the judge's heavy hand is quickly raised. He will laugh heartily at a good, understandable joke, but has little use for remarks which carry an insinuation or convey some hidden meaning. During one of the sessions last week Mr. Lindabury remonstrated at what he termed were rough-riding tactics employed by the judge in his examination of a refractory witness.

"Why do you object?" asked Judge Dickinson.

"Because the method which my learned friend is pursuing is contrary to his usual practice," said Mr. Lindabury.

"I will have no reflection made on me," shouted Mr. Dickinson, and he smote the table by way of emphasis.

At all times, however, Judge Dickinson is a typical southern gentleman. His ire may be easily aroused, but he is just as quick to forget.

Lindabury a Suave Tactician

Richard C. Lindabury, of the Corporation counsel, is directly the opposite of Judge Dickinson in his court room methods. He is equally as hard a worker as the judge, for nothing escapes him and he has his case thoroughly at his command every moment of the time. He has time, however, to attend to a varicty of matters outside of the testimony of the witness on the stand. While Judge Dickinson may be questioning a witness in direct examination, Mr. Lindabury will be sitting chin in hand, gazing at the floor; then he will turn around, lean back in his chair and look out of the window, shifting his gaze occasionally to observe his finger nails and to see if his shoes are polished satisfactorily. Suddenly he will lean forward and discuss something apparently highly humorous with his conferees of the Corporation counsel. He also leans over occasionally to make some witty remark to one of the reporters, or to examine a sketch which some artist has made of him. He does not lose a word, however, of the testimony, and is constantly entering objections or suggestions as to the wording of the questions. His objections generally contain such phrases as "the learned counsel", "my honored friend", "the worthy gentleman", etc., and though expressed politely and courteously, veiled sarcasm often is apparent in the remark and this is emphasized by a rising inflection or some other vocal intonation.

In cross examination, Mr. Lindabury is an adept at confusing the witness and leading him to contradict himself without being aware of it. In this part of the examination, Mr. Lindabury's command of English, his carefulness of diction, his vocal expression and his grasp of the case are all a delight to the listener.

He never gets so involved in the case, however, that he has not time to direct a jibe or jest at some one, no matter whom, for no person is immune to his shafts of wit.

In the examination of John A. Topping, Mr. Lindabury alluded to Mr. Topping and Judge Dickinson as pig iron experts.

"You honor me," said Dickinson, "but how do you account for it?"

"Oh," said Mr. Lindabury, "you come from the south, judge, and Mr. Topping was down there for a few years. Very simple, you see."

Cordenio A. Severance, next to Mr. Lindabury, is most active on the Corporation side. Mr. Severance, too, has his own method of conducting the questioning of the witnesses. He is an able lawyer, has a thorough grasp of the case and has a frank, genial, courteous address which never fails to inspire confidence in the witness. He, too, wears a mustache, although it is not of the same variety as Judge Dickinson's. Mr. Severance carries with him a large pair of spectacles fitted with huge blue glasses. These he alternately puts on and takes off, depending upon whether he is addressing the witness or referring to his notes.

Messrs. Reed and Bolling, the other members of the Corporation counsel to appear at the hearing, are both young men. They also conduct the cross examination of an occasional witness. Mr. Corneau has also appeared at the room in the Custom House, but so far has not taken an active part.

Brown is the Constable

The duties of Henry P. Brown, special examiner, do not appear to be very strenuous or exacting. His office is apparently largely that of a keeper of the peace, a constable of rank. Mr. Brown arises as each witness takes the stand and administers the oath. He then sits down in his chair and maintains a calm, judicial air for the remainder of the session, or until the next witness is to be examined. Mr. Brown is a tall, dignified personage who always comes to the hearings wearing a frock coat and silk hat. He is an attorney of large practice in Philadelphia and hence is not always able to be present. On such occasions, his son, John A. Brown, replaces him. Mr. Brown Jr. is a well-built, brown-skinned, young man who probably spends much of his time out of doors. Although only about 26 or 27 years of age, he has developed a marked judicial air.

(Continued on page 1191.)

Mourned Loss of Gum

Cordenio A. Severance, of the Corporation counsel, was telling, during a recess in the hearings, of some of the inner workings of his office force in St. Paul. He once had an office boy, it appears, who was an incessant chewer of gum. One day he came to Mr. Severance with a grievance.

"Mr. Severance," he said, "every time I paste my gum on the seat of my chair at night, it is gone in the morning. I wish you would see the nigger janitor about it."

Great Activity at Steelton

Harrisburg, Pa., May 27.—With the Steelton plant of the Pennsylvania Steel Co., working to 85 per cent of its capacity and shipments continuing heavy, the outlook for an unusually brisk summer ahead is exceedingly bright.

The blast furnaces are being run to their capacity with No 2 making a bonus, the frog shop is taking on new men and the rail mill continues active both night and day. The open hearths are now running full with a very heavy output.

A larger quantity of scrap than usual is being stored in the yards of the plant, which indicates that the Bessemer mill, which has been put into running order, will not be started for at least a month. The rail mill has received an order of 12,000 tons from the New York, New Haven & Hartford railroad.

MEN OF THE IRON TRADE

Arthur T. Waterfall, general superintendent of the Russel Wheel & Foundry Co., Detroit, Mich., has been appointed traffic commissioner of the board of commerce of that city for an indefinite term. His chief duty will be to solve Detroit's complex railroad traffic problems and to harmonize the traffic interests of the city's industries with the railroads, in an effort to give Detroit as good terminal and shipping facilities as any city in the United States enjoys.

Members of the board of directors, who announced Mr. Waterfall's appointment, declared there is no man in Detroit better qualified to work out a comprehensive scheme for placing and keeping the city foremost on the industrial map of the country.

Mr. Waterfall has been with the Russel Foundry Co. 25 years and has acted as general superintendent the last eight years. Directors of the company reluctantly consented to grant a temporary release to Mr. Waterfall.

Mr. Waterfall, in discussing his appointment, made it plain that he intends to play no favorites in conserving the interests of the manufacturers and the railroads in Detroit. "I shall try to see that all manufacturers, large or small, will be equally benefited by the improvements contemplated by the railroads," he said.

Mr. Waterfall is a man of engaging personality, and has a record for accomplishment. He was born in Detroit and is a member of the Detroit Transportation club, the National Industrial Traffic league, has been identified with the transportation committee of the Board of Commerce since its inception, and is a member of various manufacturers' and foundrymen's associations.

S. G. Pollard has resigned as mechanical engineer of the Cincinnati waterworks department.

Felix Kahn, of the Estate Stove Co., Hamilton, O., has gone to Europe on a three months' vacation.

J. C. Maben, chairman of the Sloss-Sheffield Steel & Iron Co., will sail for Europe in the near future.

C. Stanley Martin, for a number of years manager of the Camell, Laird & Co.'s works, Cumberland, Eng., has been appointed superintendent of the Dominion Steel Co., Sydney, N. S., to succeed C. H. McMillan, resigned.

William C. Seddon, Baltimore, has resigned as a member of the board of directors of the Alabama Consolidated Coal & Iron Co.

Theodore G. Seixas has been appointed general sales manager of the Allegheny Steel Co., Pittsburgh.

R. L. Parrish, president of the Oriskany Ore & Iron Corporation, will sail for Europe the last of this month.

Alexander McCulloch has resigned as superintendent of the De La Vergne Machine Co. and has organized the Mechanics' Tool & Supply Co., 30 Church street, New York. The company sells small machine tools, high speed machine specialties, etc.

ARTHUR T. WATERFALL

Nathan Owitz has been appointed manager of the Cincinnati office of the Wheeler Condenser & Engineering Co., Carteret, N. J.

John R. Russel, secretary-treasurer of the Great Lakes Engineering Works, Detroit, is spending a brief vacation in Europe.

John D. Ryan dined 117 friends the early part of this month, in New York, in honor of U. H. Broughton, former president of the United Metals Selling Co., who will reside in England in the future.

Dr. Th. Schuchart, efficiency expert of the Thyssen interests at Mulheim-Ruhn, has returned to his home in Germany.

Carl G. A. Schmidt, a mechanical engineer, will be placed in charge of the transmission department of the Fairbanks Co., June 1.

G. E. Randles, vice president of the Foote-Burk Co., Cleveland, expects to sail from New York, June 1, for a business trip to Europe.

E. C. Felton, F. I. Gowen, E. B. Morris and F. C. Smink have been re-elected directors of the Pennsylvania Steel Co. of New Jersey.

E. N. Breitung and family, of Marquette, Mich., will sail for Europe, June 11. Several months will be spent in Versailles, France.

C. F. Rand, general manager of the Spanish-American Iron Co., has sailed for Cuba to look over properties of his company in that country.

H. W. Kreuzburg, head of the Champion Tool Co., Cincinnati, sailed May 23 from New York for an extended business trip abroad.

Henry Melville has been appointed receiver for the Foreign Steel Co., New York, with a bond of $3,000. The assets are estimated at $16,000.

H. F. Hoevel, vice president of the Wiener Machinery Co., 50 Church street, New York, sailed for Europe recently for a prolonged business trip.

George H. Jones, vice president of the Inland Steel Co., Chicago, has sailed for Europe on a pleasure trip. He is expected to return about June 15.

E. Hawkinson, foreman in the toolmaking department of the Canadian General Electric Co., has resigned to accept a position as tool designer for the Russell Motor Car Co., West Toronto, Can.

Walter J. Frost, president of the Frost Mfg. Co., and Jerry W. DeCou, general superintendent of the Thomas B. Jeffery Co., Kenosha, Wis., have been appointed members of the Kenosha Industrial Education Board.

Walter Flanders, vice president and general manager of the automobile

MEN OF THE IRON TRADE

department of the Studebaker Corporation, South Bend, Ind., has resigned.

Max E. Duncan, until recently connected with the American Car & Foundry Co., St. Louis, is now with the Canadian Car & Foundry Co., Montreal, Can.

Guy J. Stock, Darlington, Eng., is visiting a number of steel casting plants in this country and Canada. He is the inventor of the Stock steel converter.

Henry Bevan recently was appointed general manager of the works of the Western Steel Corporation at Irondale, Wash., by the trustee for the bondholders.

George T. Robinson, superintendent of mines for the Cambria Steel Co., has resigned, to take effect May 31. He will devote his time to personal business interests.

W. H. Kane, a malleable foundryman of wide experience, has been appointed superintendent of the malleable shop operated by the Fanner Mfg. Co., Cleveland.

Herbert Du Puy, chairman of the Crucible Steel Co. of America, has returned from an extended trip abroad, a considerable part of which was spent in Africa.

C. B. Hopper, sales manager of the National Screw & Tack Co. and the Cleveland Bolt & Mfg. Co., at Cincinnati, O., is now located at 515 Mercantile Library building.

Andrew Carnegie, with his wife and daughter, sailed May 23 for his annual visit to his summer home in Scotland. The Carnegies will return to New York in the autumn.

Frank Thayer has been elected president of the Baldt Steel Co., New Castle, Pa., and Charles Ferris Jemison was elected secretary. Directors of the company were re-elected.

Frank W. Milbourn has been elected general manager of the Southern Engine & Boiler Works, Jackson, Tenn. Hugh M. Harris was appointed superintendent of the works.

Daniel G. Reid, director of the United States Steel Corporation, is planning to sail for Europe about July 1, for his annual trip. He intends to be gone several months.

William A. Moore, who has been vice president of the Tonawanda Iron & Steel Co., will soon go to North Tonawanda, N. Y., as manager, succeeding the late William B. Kerr.

George Smith, superintendent of the steel foundry department of the Londonderry Iron & Mining Co., Nova Scotia, has been appointed superintendent of the Dutcher Works plant of the Prince Steel Co., Milwaukee, Wis.

Duncan H. Macdonald, who resigned as general manager and superintendent of the Southern Engine & Boiler Works, Jackson, Tenn., plans to move to New Bedford, Mass., where he will take up special engineering work.

President James A. Farrell and Vice President G. G. Kerr, of the United States Steel Corporation, spent the past week on a tour of inspection of the coal and coke properties of the Steel Corporation in the Connellsville and other districts.

John F. Goff has been appointed receiver by Justice Garrison in the chancery court, Jersey City, for the International Iron & Metal Co., Newark, N. J., upon the application of Mrs. Katherine A. McArdle, owner of one-third of the stock.

J. B. Meriam, of the Bruce-Macbeth Engine Co., Cleveland, recently lectured before students at the Sheffield scientific school of Yale University. He spoke on gas engine construction and used lantern slides to show various details of construction.

W. S. Chase, sales manager of the National Acme Co., Cleveland, and Oliver Henn, of the same company, have returned from a three months' trip abroad. Both men were well pleased with business conditions in nearly all the foreign countries visited by them.

A. B. Gardner, for nine years associated with the mechanical department of the Eclipse works of the Fairbanks-Morse Mfg. Co., at Beloit, Wis., has accepted the position of superintendent of the mechanical department of the Alamo Gas Engine Co., Hillsdale, Mich.

Geo. W. Wilson has severed his connection with J. K. Dimmick & Co., Philadelphia, to accept a similar position with Jas. Pierpont & Co., Philadelphia, who are in the iron and steel, coal and coke business. Pierpont & Co. are contemplating opening an office in Pittsburgh, and doing a lake business this season.

Peter Donaldson, of Glasgow, Scotland, president and managing director of the Dayton Coal & Iron Co., Dayton, Tenn., has inspected the company's plant at that city and has returned to Scotland.

A. T. Van Scoy, assistant secretary of the International Harvester Co. of America, in charge of the Milwaukee district, has been elected president of the Milwaukee Industrial Education Board, appointed under the new state law to encourage vocational training, A. J. Lindemann, president of the A. J. Lindemann-Hoverson Co., stove founders, Milwaukee, is another member of the local board.

Ed. J. Russert, assistant claim agent of the National Tube Co., Lorain, O., has been appointed chief claim agent of the Youngstown, O., mills of the Republic Iron & Steel Co., to succeed Robert J. Nicholson, who will sever his connection with the company June 1 to enter the law firm of Hine, Kennedy & Manchester, Youngstown. Mr. Nicholson has been with the Republic company five years.

E. F. Lake, consulting metallurgist, Bayonne, N. J., has merged his business with that of Nixon & Raab and the consolidation will be known as Lake, Nixon & Raab with office at 156 Fairview avenue, South Orange, N. J. This firm will specialize in diecasting machinery alloys and processes; the heat treatment of steel and advice will be given as to the best methods to be employed in melting, alloying, casting, forging, welding, galvanizing, plating, etc., either ferrous or non-ferrous metals and alloys.

Frederick E. Reed, vice president, member of the executive committee and director of the Reed-Prentice Co., has tendered his resignation from all these positions because of ill health. He is 65 years old and has been identified with the business in the combine 42 years. John R. Bach, superintendent of the Prentice Bros. division of the concern, will sever his connection with it Saturday. He has been identified with the machine tool business in Worcester 35 years. C. A. Nourse, general superintendent of the American La France Fire Engine Co., Elmira, N. Y., will succeed Mr. Bach.

Equal Advantages for Buyers and Sellers

Advocated by President Farrell of the Steel Corporation —Vice President Willis L. King's Views on Contract Obligations

At the meeting of the American Iron and Steel Institute in New York, May 17, President James A. Farrell, of the United States Steel Corporation, in discussing the paper of President Clarke, of the Lackawanna Steel Co., published in THE IRON TRADE REVIEW of May 23, said:

The paper presented by Mr. Clarke and the previous discussions of this subject have covered in a comprehensive way the phases that are pertinent to the obligations of both buyers and sellers. I have no reason to change the opinion expressed at the meeting of this institute in October, 1910, that reasonable control of salesmen's efforts to secure from buyers the maximum tonnage they are willing to purchase will, in itself, be a partially effective means of correcting this recognized evil.

I believe that it is possible to bring about a state of mind in commercial circles in this country, as it has been abroad, which will recognize that a contract is a contract; and that no man, either buyer or seller, who is financially responsible, can afford to repudiate an obligation that has been entered into in good faith by both parties thereto, simply for the reason that at the time specifications are due it is advantageous to the seller to make shipment or the buyer to accept delivery.

Contracts for future delivery of material are, in a certain sense, a means of insurance accorded by custom from sellers to regular consumers, to enable buyers to make provision against the future and resell or consume the material at a profit. It is essential that merchants and consumers should be able to calculate precisely the cost of material, to enable them to manufacture and sell over a fixed period. But this period should be a reasonable one and should be limited, so far as possible in the cases of the merchant trade for resale, to three months from date of contract, and in the case of manufacturing consumers to six months.

On the theory that these contracts provide an insurance to the buyer against the possibility of his being unable to obtain continuous supplies in accordance with the requirements of his trade, it should be considered distinctly a breach of business ethics that any buyer should take out such insurance beyond his capacity, or that any seller should contract to supply material beyond the seller's capacity to consume. It is a wise provision of insurance companies that they will not grant a man life or accident insurance beyond his recognized ability to carry it, nor fire or marine insurance beyond the value of the goods insured plus a reasonable margin for loss during replacement. It is a reasonable business precaution, therefore, that sellers should ascertain the maximum consumption of their customers and should decline to sell beyond that consuming ability, and should discourage their salesmen from soliciting business from customers who have already contracted for their total requirements. In the event of the manufacturer's inability to deliver in season, provided specifications have been supplied by the purchaser in ample time, in accordance with contract provisions, exceptions should, of course, be made to this rule.

Reasonable adjustment of a contract and the deliveries called for should, of course, be made under extraordinary conditions, such as strikes, floods, accidents and other causes entirely beyond the control of the buyer or the seller; otherwise, contracts should be so drawn as to be entirely enforceable. Under such conditions, no careful buyer would overbuy, and no careful manufacturer would oversell. This would help to bring about an economic condition greatly to be desired. During the early stages of the enforcement of such contracts, there would be more or less contention. But, in the end, both the buyer and the seller would wonder why they had not brought about such conditions earlier.

Guarantees Against Declines

It is self-evident that in insisting upon buyers carrying out their contract obligations with the same due regard as they expect from sellers, there should be no guarantees against declines. But if any modification of this rule should at any time be permitted, particularly if any deviation is made in contracting for longer than the recognized period, it should be solely against seller's own decline. And there should be a reasonably compensating provision to the effect that if prices should subsequently advance, contract prices should be correspondingly adjusted. It is a distinctly unbusinesslike proceeding to permit buyers to reap any advantage that may accrue from a reduction in the contract price without allowing sellers a similar advantage when there is an advance in price. If contracts are to be made on a fluctuating basis, they should provide for advances during the life of the contract as well as for declines. In other words, the contract should be in all respects mutual.

Mr. Clarke's suggestion of a uniform sales contract is most excellent. The stipulations in such contracts as have been devised by foreign manufacturers and by a number of American manufacturers need only be those which conform to authenticated legal decisions and which are fair alike to buyers and sellers. If material is sold on contract forms which clearly indicate the obligations of both buyers and sellers, even though the provisions must necessarily be of considerable length, they will form a recognized standard, serviceable alike to both buyers and sellers. And they can in turn be made effective between the buyers and their clients, obviating the possibility of misunderstandings and the necessity for legal actions.

Recognizing Obligations

It will be a benefit alike to sellers and buyers when the obligations of each are recognized. I heartily endorse, therefore, the suggestion not only of uniform contracts but uniform quotation sheets, so that, prior to the signing of a contract and during the progress of the negotiations, buyers may know precisely their own obligations in the event of entering into a contract and can in turn make similar obligations binding on those to whom they sell.

The question of the integrity of the contract price is as important, from the standpoint of both producers and consumers, as any other obligation between them. And if the committee on contract obligations should compile a sales-contract form and a quotation form containing clearly defined provisions, equally fair to buyers and sellers and in accordance with recognized legal interpretations, there is no doubt that sellers and buyers alike would co-operate in living up to its terms. It has been found in practice that where the obligations of both buyers and sellers are clearly defined and mutually understood, it is a source of equal satisfaction to the buyer and his client, for in our business the buyer is generally himself a seller to others, who in turn distributes the material in some manufactured form.

Willis King's Discussion

Willis L. King, vice president of the Jones & Laughlin Steel Co., discussing Mr. Clarke's paper, said:

I have had hanging in my office for some years a framed motto in large and bold letters, "A Contract is a Contract", furnished me through the courtesy of E. M. Hager, president of the Universal Portland Cement Co., who, having kept the faith himself, believes in reciprocity.

This motto has been the cause of much good-natured railery and fun at my expense, but I am content, because it has enabled me to discuss this subject with many hundreds of buyers under favorable conditions. I have yet to find one who would admit any disposition to question the mutual responsibility of a contract of purchase, but the consensus of opinion was, that it had become a custom to re-write contracts when unfavorable to the buyer, and they must have the same advantage as their neighbors. Quite a few expressed the

opinion that sudden and violent fluctuations in market prices were not to their advantage, and that when steel products sell at unprofitable prices, their profits are correspondingly reduced, and this is equally true of the ultimate consumer whose purchasing power is diminished in proportion as the steel industry becomes unprofitable.

We may speculate indefinitely as to the cause, but the fact remains that no manufacturer can sell his product intelligently and no buyer can depend absolutely upon deliveries under the present loose and unbusinesslike manner of treating contracts. No manufacturer can strike a true balance between his obligations and his production, and he must, therefore, be under or over sold, neither of which is desirable; for in the one condition he feels compelled to seek new business at the expense of profit and to the injury of his fellow manufacturers, and in the other, he must disappoint his customers in delivery. It is my firm belief that this uncertainty is mainly responsible for the extreme fluctuations in prices in the recent past, and that it will continue to injuriously affect values until a contract is regarded as binding on both sellers and buyers alike.

The Remedy

Having proven our case, as I hope, that contract obligations should be respected, and that the buyer is equally benefited, what ought to be done to bring it about?

In Mr. Clarke's admirable paper, he suggests the first step necessary in the correction of this evil, namely, a complete and mutual understanding before the fact, of all the terms and conditions, including extras for sizes, quality and quantity, and which best can be obtained through a uniform contract, mutually equitable to both parties.

I hope that the committee of the institute can evolve such a contract for submission to its members, and to the trade generally, for I am inclined to think that a discussion of the matter with broad-minded buyers who, in my opinion, are equally interested, would materially assist in producing a contract so fair and equitable that all will gladly adopt it. But something more is necessary. The buyer should purchase only what he can properly use, and the seller must arrange to make the stipulated deliveries; for speculative buying deceives the manufacturer as to his obligations and is a hardship to the legitimate buyer as well.

Long-time contracts, except for specific work, should be avoided, because they are generally more or less speculative.

While the moral fiber of each party to a contract is the best guarantee of its final and equitable conclusion, I am not unmindful that sudden and extreme changes in the market prices may work serious hardship to the conscientious buyer, perhaps beyond his financial ability, and the advantage, under such conditions, of a reasonably stable and equitable market price becomes very apparent. In fact, after careful consideration of the question of contract obligations, I have come to the conclusion that the real and lasting solution of this trouble lies in a stable market, varying, of course, with the cost, but allowing a fair return to the manufacturer on his investment and, at the same time, so reasonable to the public that consumption will not be retarded.

This is the great economic question before the public, the law makers and the courts today. I do not feel that this is the time or place to discuss it, but I have a firm conviction that in due time it can and will be worked out to the best interest of all concerned.

I have had the opportunity of reading an advance copy of Mr. Clarke's able paper, which so fully and plainly sets forth all the facts connected with this subject that I find nothing to add of any real value. I agree with him that only concerted action can accomplish the desired result, and that the committee of the institute now in charge of this matter should continue its efforts to secure a contract uniform in fundamental conditions, and entirely fair to both parties to the contract in its details.

In the meanwhile, the buyers having contracts can rest satisfied that the increased demand and advance in market price now so apparent will in no way be allowed to affect the contract obligations of the seller.

STANDARD SCREW CO.

Makes Its Report for the Year Ended March 31, Last.

The report of the Standard Screw Co. for the year ended March 31, last, compares with the previous year as follows:

	1912.	1911.
Combined net profits of all Cos., less expenses.....	$162,462	*$213,466
Bond interest	27,750	*2,250
Other interest	9,460	†8,136
Total deductions	$37,210	†$5,886
Balance for dividends.....	$125,252	*$219,352
Dividends	220,000	*50,000
Defic't	$94,748	†$169,352

*Decrease. †Increase.

Total assets are $6,598,858, an increase of $54,593. There was a surplus of $809,284, a decrease of $97,086. In his report to stockholders, President W. B. Pearson says the year covered by the report has been part of a period of extreme low prices and a small volume of business. In December the outlook was so unpropitious that the directors decided to reduce the January dividend on the common stock, which was then announced. Since that time, the president says, there has been slow but steady improvement in business, which, if it continues, will bring about results that will again be satisfactory to all concerned.

The Globe Iron Co., Jackson, O., is preparing to blow out its stack soon for repairs.

INCREASED DEMAND

For Ore Properties — Prospect of Continued Activity.

Duluth, May 27. — The announcement that the James J. Hill iron ore lands would be operated by the owners and not leased to independent operators has steadied the negotiations for iron properties and has resulted in an increased demand for outside properties. Apparently the "independents" so called, meaning the iron ore consumers not part of the United States Steel corporation, have continued to provide themselves with their own ore supply as fast as possible.

The Cuyuna district in Minnesota has offered an interesting new field for negotiations. The Inland Steel Co., the Rogers-Brown Co. and M. A. Hanna & Co., all have leased and are operating or developing properties in this district. Until the recent cut in the ore freights from the Minnesota districts to the lake ports, this district had a freight-differential in its favor of 20 cents and more. Now the freight for the Cuyuna is 5 cents a ton higher than the Mesabi district rate. This is offset by the fact that the Cuyuna ore, because of its good physical structure, is classed as "old range" and favored with 20 cents a ton preference. Recently the new discoveries in the Crystal Falls and other Michigan districts have brought into competition with the Cuyuna properties ore of the same grade which when offered on the same royalty terms has the advantage of about 35 cents in freight rates to Lake Erie ports. There is a feeling that the high royalty rates on the Cuyuna and Mesabi, especially for the low grade and non-Bessemer ores, must come down. This is accentuated by the prevailing low price for ore and is also affected by the success of the extensive explorations being conducted in the Michigan iron districts. The conditions in the iron and steel trade point to continued activity in the acquiring and developing of iron properties in the Lake Superior region.

The Mott Sand Blast Mfg. Co., 24 South Clinton street, Chicago, has sold the right to manufacture its sand blast machinery in the eastern territory to the De La Vergne Machine Co., foot of East 138th street, New York. This concern manufactures refrigerating equipment, oil engines, gas producers, etc., and will have the exclusive manufacturing and selling rights in the east for the Mott sand blast machine.

BUYERS' BUREAU

Will be Maintained by Cleveland Chamber of Commerce.

Manufacturers of Cleveland, as well as other large cities of the country, are interested in the progress of the Buyers' Bureau, being conducted in that city by the chamber of commerce. The bureau, which is still in the experimental stage, is designed to be a clearing house of knowledge concerning the products of the city and is the first of its kind to be established in this country.

Through a card index system and an elaborate array of photographs, it is aimed to keep ready for use at all times, first-hand information concerning the manufactured products of the city, as well as articles for which Cleveland offers a selling but has not a producing field.

The card index system is being rapidly pushed to its highest utility and when completed, will furnish a complete list of every article manufactured in the city, by whom it is produced and what products are turned out by each manufacturer. The photographs show the products and plants of various manufactories and are used in lieu of a sample room of products, as it was thought impracticable to secure space sufficient to exhibit actual products.

The committee having the preliminary work in charge was headed by David T. Croxton, president of the Cleveland Furnace Co. In his report to the chamber, Mr. Croxton stated that the committee hoped to have enough inquiries for articles not listed with the bureau, to show that the demand warrants the establishment of new industries. The main purpose, he stated, was the spreading of knowledge of Cleveland's products with a view of encouraging industries already located there.

The following excerpts from his report show the scope of the Buyers' Bureau and explain the interest felt in the experiment in other cities:

"The Buyers' Bureau proposes to persist in its efforts to build up a complete card list of things made in Cleveland, with the makers' names under each heading, so that every inquiry can be answered on the instant. It proposes to build up a complete library of catalogs of Cleveland manufacturers and dealers as well, so that when a man inquires for something not made here, he will be referred to the Cleveland man who sells the article rather than to some outside manufacturer. We are having some trouble in getting together this information, but we propose to keep at it until our service in these lines is as nearly perfect as it can be made.

"But the most interesting feature of the bureau * * * is the exhibit of photographs of products made and sold in Cleveland, and of Cleveland plants. Some of you have seen the exhibition rooms of the Los Angeles chamber of commerce, where all sorts of products of the soil are shown, from the mammoth pumpkin to the most beautiful flowers. Some of you have seen the exhibit of American manufacturers in the Commercial Museum of Philadelphia. Nowhere, however, have you seen a permanent exhibit as comprehensive as ours is already, of local products. It would be, of course, impossible to maintain permanently a room of a building in Cleveland large enough to contain actual samples (or even models) of all the immense products of some of our factories. So we have done the next best thing, and are showing pictures of these products. When you have gone over the exhibits already in place, although they represent a comparatively small number of our manufactures, I venture to say that you will have a new conception of the vast range of things made in Cleveland.

"This display, however, is not intended purely for spectacular effects, or only to impress the casual visitor. Already Clevelanders who have been looking over the exhibits to find out just what kind of exhibit they wanted to put in themselves, have found articles pictured which they needed and would otherwise have bought outside; and they have gone to the manufacturer of these articles to talk business. But the man we are looking for is the Clevelander and the outsider who knows what he wants and will let us know what he wants. We shall show him on display, if he comes in person, the character of goods made by the people with whom he may deal; we shall set before him the catalogs of the houses which make or sell the goods he wants; but we shall as quickly as possible get him directly in touch with the sales departments of these houses."

To Build Hospital.—Plans are being drawn by the Republic Iron & Steel Co. to build an emergency hospital at its Lansingville plant, Youngstown, O., for those who are injured at the Haselton furnaces, the tube mills and the steel plant. The present hospital is too small. The new building will be of brick and steel and will cost about $8,000.

WILL SELL BONDS

Of Alabama Consolidated at Public Auction on June 3.

The Baltimore Trust Co. will sell at public auction on June 3, $1,250,000 refunding and improvement first mortgage 5 per cent bonds of the Alabama Consolidated Coal & Iron Co. These bonds are held by the trust company as collateral securing a loan of $330,000 to the iron company, which is long overdue. The bonds are part of an authorized issue of $5,000,000 and were originally intended to be used in part for modernizing the plants of the company. No part of the issue is outstanding. In the financial district the announcement of the proposed sale of these bonds is interpreted as a forerunner of the organization of a committee to protect the interests of the holders of the consolidated mortgage bonds of the Alabama company in default since May 1.

Operate Finishing Shop

Edwards & Smith Co., 1115-27 Fifteenth street, Philadelphia, recently organized, is operating a brass foundry and a finishing shop, specializing on automobile work. It is producing about 50,000 pounds per month at the present time and expects to double this output in the fall. The company has a fully equipped foundry and machine shop, which were acquired from the manufacturing department of the Bridgeman Bros. Co., that formerly occupied the building now used by Edwards & Smith Co. The latter has a full battery of oil furnaces, a complete equipment of molding machines, the ordinary miscellaneous foundry requirements and an extensive sand blast plant, the last named being imported from Germany.

Foreign Rail Trade

There is not much new stirring in rails, but prices are harder at £6 5s for heavy sections. The Great Indian Peninsula railway has placed 6,100 tons of 100's with the Barrow Hematite Co. New inquiries include 6,000 tons of 30 kilos for the Roumanian state railways, 3,000 tons for the Midland Great Western of Ireland, and 12,500 tons of 46 kilos for Siam.—*The Ironmonger.*

The coke committee of the United States Steel Corporation has gone to the Birmingham district to inspect the newly completed Kopper coke ovens at Corey. The committee is comprised of 14 experts.

CORPORATION HEARING

Concluded for the Week—Motion to Strike Out Roberts' Testimony.

(*Continued from page* 1085).

The examination of Percival Roberts Jr., was resumed Monday morning at the hearing of the Steel Corporation dissolution suit, most of Judge Dickinson's questions relating to the lists which were submitted in evidence by the witness on Friday. These lists contained monthly records of competitors of the American Bridge Co., together with their capacities and tonnages booked; other lists recorded the percentage of capacity controlled by the American Bridge Co. and the tonnages it had contracted to deliver. Mr. Roberts stated that these lists had been compiled by Chief Auditor Ball, of the American Bridge Co. and that he had seen none of the original reports on which the lists were based. Mr. Ball will accordingly be subpoenaed and examined as to the authenticity of these documents and the statistics contained in them. The witness admitted that all figures which he had submitted as representing the percentage of capacity of the American Bridge Co. were as given in these lists and were not based on his knowledge of the trade.

Judge Dickinson asked Mr. Roberts whether the Bridge company ever competed for contracts involving 10 tons or less of material. To this the witness answered affirmatively, although he could give no definite examples of such contracts. Neither could he recall offhand any large contracts which the Bridge company had taken recently.

Mr. Roberts stated that in 1898 the companies which later became members of the American Bridge Co. controlled 40 per cent of the country's capacity. He also gave some further data on tonnages figured on by that company. In 1902, when the theoretical capacity of the company was 621,000 tons, it booked a total of 497,244 tons. In 1909, when the capacity lay between 720,000 and 691,800 tons, bids were tendered on 1,674,109 tons. In 1905, when its capacity was 650,000 tons, its total sales were 638,144 tons, the domestic market taking 609,232 of this total.

At the conclusion of redirect examination Judge Dickinson objected to Mr. Roberts' entire testimony on the ground that it was based on figures and statistics in the compilation of which the witness had had no hand, and he petitioned that it be stricken from the records.

George W. K. Taylor, Brooklyn, N. Y., a jobber of pipe and fittings, was examined by Barton Corneau, this being the first time Mr. Corneau has taken such a part in the hearings. Mr. Taylor is of the firm of McMann & Taylor. He was questioned regarding the various companies which were afterwards taken into the National Tube Co., these being the National Tube Works Co., the Riverside Iron Works, the Pennsylvania Tube Co., the Oil City Tube Co., the National Galvanizing Works, the Syracuse Tube Co., the Delaware Iron Co., the Allison Mfg. Co., the Cohoes Tube Works, the Ohio Tube Co., the American Tube & Iron Co., the Chester Pipe & Tube Co., the Oil Well Supply Co., the Western Tube Co. and the Pittsburgh Tube Co. Of these companies, Mr. Taylor recounted the products and the territories into which they sold, as far as he knew then.

Have you been a customer of the National Tube Co.?" asked Mr. Corneau.

"I have, ever since its organization," replied Mr. Taylor. Before that, he said he had been a customer of several companies above mentioned.

"Did you, as a customer, become familiar with that company's form of contract selling?"

"I did.'

Mr. Corneau then had the witness identify two original contracts which had been signed, one of them in 1902, by Clifton Horton, for the National Tube Co., and by McMann & Taylor. These contracts set forth tables of discounts which were to be deducted from the list of pipe prices. By the contract Mr. Taylor's firm obtained its tubular goods at a price one-half of one per cent lower than those quoted by the company to the average jobber on condition that it purchased from 80 to 100 per cent of its goods from the National company. This reduction, said Mr. Taylor, was effected by straight billing and not by rebate.

"Were you ever a customer of the A. M. Byers Co.?" asked Mr. Severance in cross-examination.

"I was."

"Did they charge you the same as the National Tube Co. did?"

"They charged us more because they claimed their pipe was better," Mr. Taylor explained, however, that he was no longer a customer of theirs. "They sell to the same people I sell to," said he.

Mr. Severance, endeavoring to show that the National Tube Co. had not a monopoly of the tube business at the time it was organized, questioned the witness regarding the various companies which did not go into the National Tube Co. He also questioned the witness regarding a large number of independents who have greatly developed since, despite competition with the National company, thus tending to show that such competition has not been harmful. The witness also admitted that the percentage of the industry controlled by the National Tube Co. has greatly decreased since its organization.

In redirect examination, the witness stated that the majority of the companies which had been mentioned in the cross examination were new companies which had been formed since the National Tube Co. was organized and prior to 1903.

To give the opposing counsel an opportunity to digest a mass of documentary evidence, and determine whether or not it shall be introduced in the record of testimony at future hearings, no more sessions will be held this week. It is believed, however, that the hearings will be resumed next Monday, in the room in the Custom House, in which they were originally held.

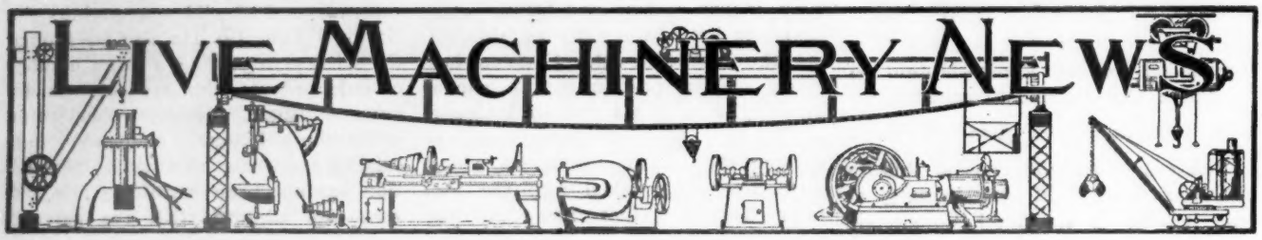
Pushing Gary Output

Owing to the heavy demand for open-hearth steel, the Indiana Steel Co. continues to put in service the last unit of open-hearth furnaces at the Gary plant as fast as the brick work on single furnaces can be completed. Of the final unit of 14 furnaces of the works, all but six furnaces are now making steel and these will be operated as soon as possible. With the finishing of these furnaces, the Gary plant will embrace 42 open-hearth furnaces.

Not Aiding Roosevelt

Chairman E. H. Gary of the United States Steel Corporation, in reply to the statement of Senator LaFollette that the former was contributing to the campaign fund of Mr. Roosevelt has issued the following: "Neither I nor the Steel Corporation has contributed, is contributing or has been asked to contribute anything whatever to the Roosevelt campaign."

Nova Scotia Report.—The annual report of the Nova Scotia Steel & Coal Co., for the year ended Dec. 31, last, shows the total profits to have been $1,019,392, with charges, etc., of $569,050, leaving a balance of $450,342. Total dividends amounted to $442,400, while the total surplus was $508,545.



In New York machinery dealers are well pleased with the aggregate of orders placed during May, and the general sentiment respecting business prospects throughout the year is brighter today than it has been for more than a year. Distribution of orders aggregating about $150,000 by the Delaware & Hudson Railroad Co., and by the Ingersoll-Rand Co., for approximately $100,000, have been the important features of the machinery trade this month. There also has been a large amount of scattered buying done by industrial, power and light, and contracting concerns, denoting a slight improvement in the business conditions.

In Pittsburgh inquiries are reported to be more numerous, although machinery men are still anxious for new business, and have considerable capacity that is not occupied very fully. There is a slight betterment in prices, and the new work that is coming out represents a fairly good volume, and in the aggregate of considerable importance.

In Cleveland machinery men report the market has remained about the same the month of May. Small orders have been numerous but large orders rather scarce. Several fairly good inquiries for machine tools were reported the end of last week. The second hand machine market remains quiet.

In Chicago and western cities the machinery market has not changed especially. The scale of buying is expanding slowly and there is considerable quiet activity on the part of railroads. Contrary to general expectations the car builders have not come into the market for any great number of tools.

Power Plant Equipment

The Southern California Edison Co. will erect a sub-station at Van Nuys, Cal.

The city of Bedford, Ind., is in the market for three electric driven centrifugal pumps.

The Washington Coal & Coke Co. is building an additional power house and power equipment for its plant at Dawson, Pa.

Plans have been prepared for the improvement of the municipal electric light plant at Holland, Mich., at an estimated cost of $26,000.

A franchise has been granted to Harry D. Barker, St. Croix Falls, Wis., to construct and operate an electric light and power plant at Balsam Lake, Wis.

E. P. Decker & Co., Ann Arbor, Mich., have been awarded a general contract for a new power house for the Eastern Michigan Edison Co., Ann Arbor, for the sum of approximately $100,000.

The Large Distilling Co. has ordered a 200-horsepower boiler for its plant at Peters Creek, Pa., and also a 75 kilowatt generator and exciter engine which will be installed by the Ridgway Dynamo & Engine Co.

It is reported that the Eastern Wisconsin Railway & Light Co., Fond du Lac, Wis., P. E. Cowles, manager, will spend about $50,000 for new equipment and improvements to its power plant and about $10,000 on its gas plant.

Estimates are being taken on the new power plant and other buildings and equipment for a new coal mine to be opened by the Provident Coal Co. at Fairpoint, O. George S. Baton & Co., Pittsburgh, are the engineers in charge.

Ruebel & Wells, consulting engineers, 1422 Chemical building, St. Louis, will shortly open bids for two motor-driven centrifugal fire pumps and a motor-driven centrifugal house service pump, together with switchboard for the state hospital at Fulton, Mo.

Plans for a two-story power plant building at the Cleveland Boys' Home, Hudson, O., have been completed by Briggs & Nelson, architects, the Rose building, Cleveland. Boilers and generators have been purchased and nearly all other equipment has been provided.

James H. Matthews & Co., Pittsburgh, have taken estimates on the power equipment for their new building on Forbes street, Pittsburgh, which includes two 100-horsepower boilers, two 90-horsepower steam engines to be direct-connected to two 50 kilowatt, and stokers, pumps, feed water heater, piping and switchboards. W. Edgar Reed is the consulting engineer.

The Granby Mining & Smelting Co., of New York, which recently purchased ground in Washington Park, East St. Louis, Ill., has let a contract to the James Bright Construction Co., of St. Louis, for the erection of buildings to cost about $100,000. They will consist of a power plant, pottery-house, stock house and machinery and carpenters' building. Contracts for other buildings to cost about $500,000 will be let later.

New Construction

It is announced from St. Petersburg that the Krupps have acquired land at Riga for the erection of a gun foundry.

The Brann-Stewart Co., steel erectors, Philadelphia, has purchased a site at Bleigh and Tacony streets, that city, for an erecting shop. The building will cost about $25,000.

Contracts for a brick and steel foundry building for the Murphy Iron Works, Detroit, have been let. The plant will be located at the foot of Walker avenue.

The American Radiator Co., Chicago, is making additions to its foundry at Litchfield, Ill. Two buildings will be added, one 100 x 150 feet, and the other 75 x 100 feet.

The Belknap Mfg. Co., Bridgeport, Conn., manufacturer of brass goods for steam, gas and water, is building a new foundry, 134 x 50 feet. Nearly all required machinery has been contracted for.

The Massey-Harris Co., agricultural implement manufacturer, of Toronto, is completing an extensive addition to its foundry and will shortly erect a four-story warehouse, 110 x 270 feet.

The Badger Foundry Co., Racine, Wis., is making plans for an addition which will double its capacity. The addition will be an exact duplicate of its present works and will be of brick and steel construction.

The Spokane Ornamental Iron Co., Spokane, Wash., which recently increased its capital stock from $50,000 to $100,000, has made plans to erect

an addition to its foundry for the establishment of a heavy fitting department. Its dimensions will be 50 x 150 feet.

The Harrison Square Foundry Co., Dorchester, Mass., recently incorporated, is completing a foundry on Gibson street, that city. The plant is being equipped with modern machinery, for the manufacture of machine castings. G. H. Carson, Roxbury, Mass., is president and general manager and C. H. Sawyer, treasurer.

The H. J. Frank Foundry Co., Davenport, Ia., advises that it has in course of erection a modern one-story brick foundry costing $12,500. The building is 80x150 feet. Part of it will be used as a machine shop. All equipment has been purchased. The company expects to be doing business about the middle of June or the first of July.

The Plumbers Woodwork Co., Algoma, Wis., whose plant was totally destroyed by fire on April 28, advises that it has started the construction of a new building of considerably larger capacity. It will be 18 x 54 feet. It is expected to equip the brass foundry with molding machines and other labor-saving devices so that when completed it will be a first class foundry throughout. The company will operate two furnaces in connection with its foundry, which will not only enable it to take care of its requirements in the brass goods line, but will at the same time place it in splendid position to take on additional work of this nature.

Machine Tools

The New Haven Boiler Co., New Haven, Conn., is in the market for an overhead crane.

E. J. Voggenthaler Co., Dubuque, Ia., is in the market for a combined punch and shear with a 24-inch throat, equipped motor drive.

The Racine Electric Co., Prospect and Superior streets, Racine, Wis., has installed a Norton automatic grinding machine and a Pratt & Whitney automatic screw machine. Some other equipment will be purchased.

The Columbia Steel Co., 503 Market street, San Francisco, Cal., is in the market for a positive blower or other type, which must be capable of delivering 4,000 cubic feet of free air per minute, compressed to five pounds.

The Ingersoll-Rand Co., 11 Broadway, New York, has been a large buyer of machine tools and other plant equipment in the New York market recently. It is said that the purchases made by the manufacturing company during the latter part of May amount to approximately $100,000. The machinery will be distributed to a number of the company's plants, but is mainly intended for installation in the Phillipsburg, N. J., factory. It is not generally understood that the requirements for the Cameron Steam Pump Works, now under construction at Phillipsburg, are included in the recent purchases, and machinery dealers are anticipating additional important sales of machinery for that plant, during the next month or two.

Water Works

San Diego, Cal., has voted $680,000 bonds for improvements. The waterworks department will be extended and considerable cast iron and steel pipe will be required.

The city council of Modesto, Cal., has advertised for bids for two 100,000-gallon steel tanks and mains for extensions to the municipal water distributing system.

Miscellaneous

The plant of the Fulton Electric Light & Power Co., Fulton, Ill., has been transferred to the Illinois Northern Utilities Co., Chicago.

The Cincinnati Electrical Tool Co., 650 Evans street, Cincinnati, has just completed two sizes of universal drills, which will operate on direct current as well as alternating.

The Martin Dennis Co., 859 Sumner avenue, Newark, N. J., will erect a brick factory at 155-156 Sylvan avenue. The building is estimated to cost $37,000, and will be equipped with special manufacturing and power machinery.

The Lilly Coal & Coke Co., Brownsville, Pa., is constructing a new coal mining plant at West Brownsville, including a steel tipple, power plant, and haulage equipment. A portion of the machinery has already been ordered.

The National Mfg. & Plating Co. has begun business at 133 North Third street, Louisville, Ky. It will make gas fixtures. Most of the equipment has been purchased, but some additional machinery will be needed later.

Benjamin F. Davis, boiler manufacturer, 35 Westminster street, Worcester, Mass., has filed a voluntary petition in bankruptcy in the United States district court, in Boston. Liabilities are scheduled at $978.50, and no assets are listed.

Plans are being drawn for a 15-story steel frame hotel to be constructed on Stockton street, San Francisco. McDonald & Applegarth, San Francisco, are the architects. Structural requirements are reported to be between 1,000 and 1,500 tons.

The Aultman & Taylor Machinery Co., Mansfield, O., is building a steel frame corrugated iron shipping room and warehouse as an addition to its works.

Officers have been elected by the Kentucky Solvay Coke Co., Ashland, Ky., recently incorporated. E. C. Witherby, vice president and general manager, is in charge of the construction of the plant. Coke and by-products will be manufactured.

The Esperanza Oil Co., of California, has authorized a bond issue to lay a 170 mile pipe line from Midway Field to San Pedro. Eight-inch steel pipe will be used. The contract for the first installment of pipe is to be awarded soon.

Sales of jar-ramming molding machines have been reported by the U. S. Molding Machine Co., Cleveland, as follows: Bowler Foundry Co., Madison Foundry Co. and the Fulton Foundry Co., Cleveland, and the Medina Foundry Co., Medina, O.

A new crane has been installed, and a sand grinding machine and other machinery are being placed in the plant of the Federal Street Foundry Co., Chester, Pa., a subsidiary of the Cramp Ship Building Co., Philadelphia. Several extensive improvements are said to be in contemplation.

The Bram-Stewart Co., Philadelphia, steel erectors, have purchased a plot on Bleigh and Tacony streets, that city, and will build an erecting shop. Plans are being prepared for a building to cost $25,000, and construction work will be started during the summer.

The Standard Milling Co., 49 Wall street, New York, has had plans prepared for a large flour mill and grain elevator to be erected at Seneca and Alabama streets, Buffalo, N. Y. The structure will be nine stories and basement, and constructed of reinforced concrete throughout, making it absolutely fireproof.

The Westinghouse Electric & Mfg. Co., Pittsburgh, has taken orders for motors from the Sands Springs Railway Co., Sands Springs, Okla.; the St. Louis Electric Terminal Railway Co., St. Louis, Mo.; the Oregon Electric Railway Co., Portland, Ore.; the Wilkes Barre Railway Co., Wilkesbarre, Pa., the Tri-City Railway Co., Dayenport, Ia.; the Capitol Traction Co., Washington, D. C.; the City & Suburban Railway Co., Brunswick, Georgia, and the Comaguey Electric Power Co., New York City, the total amounting to 64 motor sets, and reports the demand for traction railway equipment exceptionally active.

New Buyers

(In order to assist the post office in delivering letters to new concerns, it is suggested that the names of incorporators be written in the lower left hand part of every envelope addressed to such new companies.)

The following manufacturing companies have filed articles of incorporation:

Dan Shea Boiler Works, Memphis; $20,000; by Edward T. Shea, Dan Shea Jr., T. F. McCullough, and others.

Stevens Railway Specialty Co., St. Louis; $2,500; by C. L. Kyle, H. L. Nixon and O. Keiser.

The Maynard Steel Casting Co., Milwaukee; $10,000; by F. E. Shields, L. Bergner, Julius K. Fons.

Kentucky Solvay Coke Co., Ashland, Ky.; $650,000; by E. L. Pierce, J. G. Hazard, W. B. Seaton, etc.

Dominion Machine & Tool Co., Ltd., Toronto; $40,000; by provisional directors, Frank M. Kimbark, Alfred Heald, John R. Bell and others.

Mitchell Crusher Mfg. Co., Ltd., Toronto; $50,000; by provisional directors, Isaac L. Mitchell, Henry T. S. Young, S. L. Hallatt and others.

The Wisconsin Aluminum Foundry Co., Manitowoc, Wis.; $35,000; by August Heden, A. W. Nelson, A. Strave, George Dahl, O. V. Sederstrom.

Memphis Nut, Lock & Bolt Mfg. Co., Memphis; $500,000; by W. T. Peter, G. D. Siler, C. E. Pigford, H. W. German, W. K. Burton.

The Doty Engine & Boiler Co., Ltd., Goderich, Ont.; $40,000; by provisional directors, John W. Doty, Frederick W. Doty, Charles W. Doty and others.

The Ohio Motor Car Sales Co., Cincinnati; $100,000; to manufacture and sell automobiles; by C. F. Pratt, A. E. Schafer, H. T. Boulden, Jasper E. Brady, S. C. Roettinger.

Van Norman Machine Tool Co., Springfield, Mass.; $400,000; to manufacture machinery; by Frank H. Page, Springfield; Frederick D. Van Norman, Chicopee.

Standard Steel Shelving Co., Boston; $25,000; to manufacture office fixtures; by Ernest L. Brown, Frederick W. Mowatt, both of Lynn, Mass.

The Cleveland Worm & Gear Co., Cleveland; $100,000; by Frank M. Gregg, A. T. Hills, O. R. Collar, H. M. Holagren, A. A. Lutton.

The Canadian Morehead Mfg. Co., Ltd., Woodstock, Ont.; $25,000; to manufacture steam appliances; by provisional directors, George H. King, Geo. W. Cole, A. S. Belcher and others.

H. Barnard Co., Ltd., Hamilton, Ont.; $400,000; to manufacture steel stamps and other marking devices; by provisional directors, Harry Barnard, Marie A. Barnard and Eva H. Barnard.

Adductor Davits, Ltd., Toronto; $100,000; to manufacture machinery; by provisional directors, Hugh A. McNeil, Thomas H. O. Marten and Albert E. Caldwell.

The Progressive Structural Steel Co., Buffalo; $50,000; to manufacture steel and iron; by directors, Elizabeth Wurtz, Charles T. Moebrus, Allan J. Ackerman, Peter W. Wurtz and Elijah Holt, all of Buffalo.

Detroiter-Baltimore Co., Baltimore; $50,000; to manufacture automobiles, motor trucks, etc.; by R. H. Croxton, G. A. Jarman, J. Oscar Stermer, Clara L. Croxton and Howard F. Smith, all of Baltimore.

Pitt Motor Truck Co., Pittsburgh; $200,000; to manufacture automobiles and motor vehicles; by J. E. Douglass, E. P. Douglass, W. S. Phillips, F. O. Brandt and J. E. McCalmont, all of Pittsburgh.

The Standard Engineering Co., Belfast, Me.; $10,000; to manufacture and deal in automobile electrical and other supplies and equipment; by Austin W. Keating, Belfast; Maurice W. Lord, Augusta.

Detroit Tool Co., Detroit; $100,000; to manufacture tools and machinery; by Wm. S. Holmes, H. W. Holmes, Detroit; Robert H. Grant, Ann Arbor, Mich.; Alfred C. Veith, Pontiac, Mich., and Harry P. Harding, Hamden, O.

Smart Auto & Mfg. Co., Indianapolis; $50,000; to manufacture automobiles and automobile parts; by directors, O. S. Shrader, D. W. Reed, F. W. McCredie, O. E. Cummings, Brinay Smart, I. H. Shelton, L. B. Willis, Thomas Singleton and W. A. Virtue.

The Crane Engineering Co., Columbus, O.; $1,000; to manufacture conveying, hoisting, power-transmitting and other machinery and appliances; by Paul T. Norton, R. H. Platt, Julius F. Stone, Samuel P. Bush and William Deshler Warner.

The McCormick Mfg. Co., Lisbon, O.; $10,000; to manufacture vehicle couplers and other articles manufactured from iron, steel and wood; by W. L. Ogden, B. F. Hennacy, Joel L. Brown, C. E. Davidson and Connor Lewis.

General Industrial

The Sterling Steel Foundry Co., Pittsburgh, has increased its capital stock from $250,000 to $500,000.

The Seamless Pressed Steel Mfg. Co., operating on a small scale at Redkey, Ind., maker of automobile trucks, is said to be seeking a location in Hartford, Ind.

The Pittsburgh-Buffalo Co. announces its intention to build 500 additional coke ovens in Marianna, Pa., making the total number 1,000 ovens, and expects to have the new ovens in operation late in the fall.

The Peacock Iron Co., being organized at Gadsden, Ala., with a capital stock of $100,000, is negotiating with the Gadsden Car Works to supply the latter with $5,000 worth of car wheels each month.

The Sweets Steel Co., Williamsport, Pa., has placed its new open hearth furnace in operation. It is said $100,000 will be expended for further improvement and enlargement of the company's plant.

The Osterberg Tin Plate Co., Waynesburg, Pa., is being taken over by the Waynesburg Tin Plate Co., recently incorporated with $100,000 capital. The new company is headed by J. W. Closer, W. R. Hawkins and C. L. Cochran.

The Barney & Smith Car Co. has issued a statement announcing that the value of orders now on its books for railroad equipment aggregates $2,250,000. Inquiries are reported to be better than at any time since the panic of 1907.

The Combinaton Steel & Pneumatic Tire Co., Swissvale, Pa., has been chartered for the manufacture of pneumatic tires. W. K. Weaver and W. A. Knorr of Swissvale are the incorporators, and the capital is $200,000.

The Holbrook-Armstrong Iron Co., Racine, Wis., manufacturing machinery, gas and gasoline engines and motors, etc., is considering the erection of a large addition. The com-

pany is unable to cope with its orders with its present facilities.

The C. H. Besly Co., Chicago, having a principal plant at Beloit, Wis., has started work on a large addition to the Beloit works. The Beloit common council has vacated a street to permit of the joining of two large buildings with an addition.

The Birmingham Tool & Implement Co., Birmingham, Ala., has been incorporated with a capital of $65,000. The company will manufacture and sell tools and farm implements. P. S. Webber and others are stockholders.

The American Radiator Co. of Canada, Ltd., recently incorporated at Brantford, Ont., advises that it will take over the plant and business of the American Radiator Co., which, for a number of years, has been operated at Brantford.

The East St. Louis plant of the American Steel Foundries, turning out bolster plates and frames, is resuming operations after a protracted shutdown. Demand for these products has increased to such an extent as to necessitate the opening of the works.

The Hunt Boiler Works, Marinette, Wis., has been awarded a $10,000 contract by the Sawyer-Goodman Lumber Co. to manufacture a new battery of boilers, a steel stack and other equipment for the company's No. 2 mill.

The Attica Bridge & Iron Co., which will remove to East St. Louis, Ill., from Attica, Ind., has broken ground for its $1,000,000 plant, the erection of which will begin at once. The concern is owned by Curtis Bros., and will employ 500 men.

The Memphis Nut, Lock & Bolt Mfg. Co., Memphis, Tenn., will erect a plant for the manufacture of locks and bolts. The company is capitalized at $500,000. W. T. Peter, G. D. Siler and W. K. Burton are interested in the company.

The Cincinnati Locomotive & Car Works, Ludlow, Ky., is being reorganized, and the capital stock will soon be increased. It is also probable that the factory will be moved to a more favorable location in that same suburb.

The Gonzales Bridge & Iron Works, established in Gonzales, Tex., a few months ago by northern capitalists, has closed its office in Gonzales and the work is abandoned. The promoters are moving their machinery and effects to some point in Arkansas.

Osgood & Osgood, engineers, 521 Widdicomb building, Grand Rapids, Mich., have awarded a general contract for a five-story building, 100 x 200 feet, for the Wolverine Brass Co., to C. Hoertz & Son, Grand Rapids. The new plant is to cost approximately $100,000.

The Firth-Sterling Steel Co. is taking bids on erecting an addition to its plant near McKeesport, Pa., from private plans.

The Brier Hill Steel Co. has placed an order with the Erie City Iron Works, Erie, Pa., for 12 500-horsepower vertical water tube boilers for its new open-hearth plant and two 500-horsepower Erie City vertical tube boilers for the Thomas Works of the company at Niles, O.

A meeting of holders of Central Iron & Steel Co. first mortgage 5 per cent bonds has been called for June 3, at the offices of the Girard Trust Co., Philadelphia, for the purpose of selecting a successor to the Harrisburg Trust Co., which has resigned as trustee of the mortgage.

The Hartz Machine Co., 612 Arch street, Philadelphia, has received a contract to equip with machinery the entire plant of S. B. Hibbs & Son, millers, Humeville, Pa. It also has received a contract to equip the plant of H. E. Moore, Dover, Del., with a complete line of milling machinery.

Morris, Wheeler & Co., 1608 Market street, Philadelphia, are among creditors asking the appointment of a receiver for the Risdon-Alcott Turbine Co., Mount Holly, N. J., to which the Philadelphia firm furnished iron. Assets of $24,561 and liabilities of less than that amount, including $1,756 for wages, are listed.

The International Typesetting Co. has bought both standard and special metal working machinery during the past week for installation in the new factory being constructed in Brooklyn, N. Y. The company will manufacture type-setting apparatus in competition with the Mergenthaler Linotype Co.

The Union Motor Truck Co., Sunnyvale, Cal., recently incorporated, will erect a factory for the manufacture of motor trucks. The officers are C. Y. Williamson, president; Ernest Horstman, vice president; W. P. Buckingham, secretary and Edgar Pomeroy, treasurer. Some new machinery will be purchased.

The Toledo Metal Hub Co., Toledo, O., has been incorporated with a capital stock of $20,000. The incorporators are Leonard Bauroth, Emil Bauroth, F. August Bauroth, Hugo Bickel, George Hannes and Henry Stautzenbaum. The company will manufacture metal hubs for heavy wagons.

The Spencer Wire Co., a corporation organized under the laws of Massachusetts, in its report of its condition on April 1, last, to the secretary of the commonwealth, shows its assets to be $1,141,336, against $880,991 for the same time in 1911. Its surplus was $21,112, against $250,000 in 1911.

The Farrar Pump & Machinery Co., St. Louis, recently incorporated, advises that it does not expect to erect a plant at the present time, but will concentrate all of its efforts toward the sale of Hooker steam pumps, American centrifugal, deep well and turbine pumps and the Otto combustion engines.

The Browning Steam Shovel Co., Mansfield, O., which recently incorporated and took over the Browning Mfg. Co., that place, has elected officers as follows: President, Victor R. Browning; vice president, R. M. Calfee; treasurer, E. M. Graves; secretary, O. A. Sykora. The company has offices in the Rockefeller building, Cleveland.

The plant and property of the Victor Stamping Co., Cincinnati, has been purchased by the Western German Bank, of that city, the price being $30,000. The buyer was the plaintiff in the bankruptcy suit recently brought against the stamping company. As soon as the sale has been confirmed by the court, the property will again be placed upon the market.

The Northwestern Iron Co., Colby-Abbot building, Milwaukee, is planning the erection of 70 coke ovens as a part of its equipment at Mayville, Wis. Thirty ovens are to be installed this year and the remainder early in 1913. The gas will be used in the briquetting plant. The company has increased its capital stock from $2,000,000 to $2,500,000.

The Detroit Bridge & Steel Works, Detroit, has just closed contracts for the Grosse Isle highway bridge, which will call for 1,000 tons, and a Strauss bascule over the River Rouge, requiring 400 tons. The Grosse Isle bridge will have four spans of 180 feet, one swing span of 310 feet and an approach of about 200 feet.

The Lima Locomotive & Machine Co., Lima, O., has sold, through the New York office, 50 Church street, to the Erie Railroad, five Pacific type locomotives. The engines are to have a wheel base of 36 feet 2 inches, driving wheel base 14 feet; driving wheels 79 inches diameter; cylinder 27 x 28 inches, and will weight 276,000 pounds each.

The KaDix Newark Motor Truck Co., Newark, N. J., advises that it has been organized for the purpose of manufacturing motor fire-fighting and

commercial trucks. To this end the company has obtained the sole rights to use the Dixon pump. No building will be done at this time. Provision has been made for the necessary equipment.

The Morse Twist Drill & Machine Co., a corporation organized under the laws of Massachusetts, had assets amounting to $1,147,423 on Feb. 29, last, according to its report filed with the secretary of the commonwealth. The total on the same date in 1911 was $1,142,972. The surplus was $245,572, compared with $215,572 for the previous year.

The Standard Steel Car Co. of Pittsburgh has awarded contracts for the building of a railway steel spring plant adjoining the Butler, Pa., shops of this company, in order to supply its own car springs. The buildings will be of the shop type with steel frame and corrugated sheet exterior. The new department is expected to be in operation during the early summer.

Annual reports of some of the Westinghouse companies in Europe show considerable improvement in business and profits. At the annual meeting of the Westinghouse Brake Co., Ltd., London, profits of £96,592 were shown. In 1911, the company paid dividends amounting to 20 per cent. Gross business of the British Westinghouse Electric Co., Ltd., was £126,143, compared with £112,538 in 1910.

The United Refrigerator & Ice Machine Co., Kenosha, Wis., is contemplating an addition to its shops and the purchase of further equipment, aggregating in cost about $50,000. The company employs 200 skilled mechanics, as compared with 60 when the plant was moved from Racine, Wis., to Kenosha. A 6 per cent dividend was declared at the annual meeting and the construction work authorized by the stockholders.

The entire plant of the Portsmouth Machine & Casting Co., Portsmouth, O., including the foundry, machine, pattern and forge shops, all real estate and buildings, as well as the personal property, has been purchased by L. C. Turley, Portsmouth. Mr. Turley is open to propositions from those having some special line of casting and machine work for the manufacture of which they can use the equipment of the modern foundry and machine plant which he has purchased.

The Lanston Monotype Co. reports net profits for the year ended Feb. 29, last, of $614,397, an increase of $9,328, while dividends paid aggregated $360,000, and $96,609 was written off for depreciation, etc., leaving a surplus for the year of $157,788. The total surplus is now $1,657,005. It was proposed to the board of directors that the cost of the new factory building, which will be completed in October, be capitalized, but no decision has been reached on this point.

The Michigan Electric Welding Co., Detroit, advises that it has taken over the Detroit Electric Welding Co. and has moved the entire plant to its works at 514 Hart avenue. The plant now consists of a machine shop, 50 x 84 feet, an electric welding department, 36 x 42 feet, and a gas welding department, 50 x 28 feet Considerable additional equipment has been installed and the company is planning a new three-story reinforced concrete building to be erected in the near future.

The Garwood Gas Lamp & Heater Co, Canton, O., successor to the McLain-Garwood Co., recently organized with a capital stock of $50,000, advises that it will manufacture and sell the Garwood steam radiator, using gas for fuel, and the Garwood inverted gas arc lamps, the lamps being especially constructed for factory and foundry lighting. The plant is located in the J. H. McLain Co. property, that company supplying power, light and heat for the recently organized concern, which is not contemplating any new building at this time.

The A. Bentley & Sons Co., Toledo, O., which is building the 11 buildings constituting the plant of the Louisville city hospital, Louisville, Ky., is receiving material from the structural iron manufacturers. The Riverside Bridge Co., Martins Ferry, O., is furnishing the structural iron; the Carnegie Steel Co., Pittsburgh, the bars, and the Dow Wire & Iron Works, Louisville, Ky., the ornamental iron. The mechanical equipment will be installed when buildings are more nearly completed. The hospital entire will cost about $850,000.

The Germantown Tool Works, Philadelphia, advising in regard to the plant it is about to build to replace the one destroyed by fire some time ago, says that ground is being graded for the railroad siding. It is expected to begin building within two weeks. The plant will consist of seven one-story buildings from 30 to 40 feet wide and 100 feet long and of reinforced concrete and slow-burning construction. They will be connected by a vestibule. It is expected to occupy and have the plant in operation within three months from the day of breaking ground.

The Ross Gear & Tool Co., Lafayette, Ind., advises that its new plant will consist of buildings approximating 50,000 square feet of floor space, and will be 110 feet wide and 400 feet long, part of the buildings being two stories. The main shop will be 110 x 240 feet, fireproof construction throughout, with saw-tooth roof of red tile resting on steel girders. The window sash will be of steel, the walls of brick and the floor of concrete. The rest of the factory will consist of shipping and receiving rooms, stock room and offices, which will be semi-fireproof in construction. In addition to these there will be a blacksmith shop and a case hardening room, which will be of fireproof construction.

Trade Notes

The Erie Forge Co., Erie, Pa., announces that it has opened a branch sales office at 1406 Fisher building, Chicago, with E. H. Lange in charge.

The Macomber & Whyte Rope Co., 507-509 Clinton street, Chicago, recently incorporated in Wisconsin, advises that its general offices will remain in Chicago. It was incorrectly reported that they would be moved.

The Edwards Mfg. Co., Cincinnati, manufacturers of sheet metal building material, has opened a branch warehouse and sales office at Dallas, Tex., in charge of J. F. Agnew. This was made necessary because of the company's increasing business in the south and southwest.

The Wiener Machinery Co., New York, and its subsidiary companies, have moved into larger quarters in the new annex of the Hudson Terminal building, at 50 Church street, where half of the third floor will be occupied by them. The Wiener Machinery Co. has recently increased its capitalization to $50,000.

The Lake Shore Engine Works, Marquette, Mich., has extended its plate shop with a 50-foot addition, which makes the building now 120 x 42 feet. Considerable new equipment has been installed, including a Niles car-wheel boring machine. The company now has orders on its books for more than 300 cars of various kinds for the iron and copper mines on the northern peninsula.

Fires

A loss estimated at $3,000 was caused recently by fire which damaged the brick office building of the Columbus Iron & Steel Co., Columbus, O.

The Hughes Elevator & Warehouse Co., Nashville, Tenn., suffered a $100,000 fire loss in the destruction of its plant. H. H. Hughes, president of the company is considering immediate rebuilding.